

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 2,0 K5
Edition : 06.12.91
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE5/10F2250L395
Type number : 0 460 405 043
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 069 Sond.fzg.

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50,00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,2
(from BDC): +-0,02(0,04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 750
Setting value mm: 3.10...3.50
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 750
Setting value bar: 5.50...6.10
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750
Del. quantity cm3/
1000S.: 43.50...44.50

Shutoff
electromagnet Volt: 24
Dispersion cm3/: 2.5
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000S.: 28.00...29.00

Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 8.00...10.00

Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 2.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2525
Charge press hPa: 750
Del. quantity cm3/
1000S.: 10.00...14.00

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 50.00...100.00
mind 1000S.: 50.00

Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2250
Charge press hPa: 750

TD travel mm: 5.40...6.20  
mm: (5.00...6.60)

Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 1500  
Charge press hPa: 750  
TD travel mm: 3.10...3.50  
mm: (2.50...4.10)

Shutoff  
electromagnet Volt: 24  
4th speed 1/min: 850  
Charge press hPa: 750  
TD travel mm: 1.10...1.90  
mm: (0.70...2.30)

Shutoff  
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 3.40...4.00

Shutoff  
electromagnet Volt: 24  
2nd speed 1/min: 1500  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 5.50...6.10

Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 2250  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 7.30...7.90  
Shutoff  
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Shutoff  
electromagnet Volt: 24  
Overflow : 55.5...125.0  
quantity cm<sup>3</sup>/10s: (40.5...140.0)  
2nd speed 1/min: 2250  
Charge press. hPa: 750  
Shutoff

electromagnet Volt: 24  
Overflow : 69.5...180.5  
quantity cm<sup>3</sup>/10s: (54.5...195.5)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 850\*  
Charge-air pressure-setting  
point hPa: 400  
LDA-stroke mm: 2,4

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 35.50...36.50  
1000S.: (33.00...39.00)

2nd speed 1/min: 2700  
Charge press. hPa: 750

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...6.00  
1000S.: -

5th speed 1/min: 2525  
Charge press. hPa: 750

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 10.00...14.00  
1000S.: (8.00...16.00)

8th speed 1/min: 2425  
Charge press. hPa: 750

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 23.00...33.00  
1000S.: (22.00...34.00)

9th speed 1/min: 2250  
Charge press. hPa: 750

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 36.50...38.50  
1000S.: (35.30...39.70)

12th speed 1/min: 1500  
Charge press. hPa: 750

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 43.50...44.50  
1000S.: (41.80...46.20)

18th speed 1/min: 600  
Charge press. hPa: -

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 28.00...29.00  
1000S.: (25.50...31.50)

20th speed 1/min: 600  
Charge press. hPa: 750

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 33.50...36.50  
1000S.: (32.00...38.00)

Mech. shutoff:  
Mech. Abststellung:

1st speed 1/min: 2250  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -

Shutoff  
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 425



Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 425

Shutoff

electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 8.00...10.00  
1000S.: (5.00...13.00)

Dispersion cm<sup>3</sup>/: 2.0  
1000S.: (3.0)

2nd speed 1/min: 500

Shutoff

electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 0.00...4.00  
1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 400

Shutoff

electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 35.00...85.00  
1000S.: -

2nd speed 1/min: 500

Shutoff

electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 20.00...40.00  
1000S.: -

4th speed 1/min: 100

Shutoff

electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 50.00...100.00  
1000S.: -

Shutoff electromagnet:

Cut-in

min voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: 5,6...6,0

MS mm: 1,6...2,0

SVS max. mm: 4,0

LDA stroke mm: 2,4

Remarks:

Overflow restriction 0.75 mm - Part No.  
..343,..344 :

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 3,1 A4  
 Edition : 10.12.91  
 replaces : -  
 Calibrating oil : ISO-4113  
 Injection pump : VE4/11F1625L217-2B  
 Type number : 0 460 414 031  
 Customer Part-No. :

Customer-specific information  
 Customer : PENTA

Engine : TAM 31

Power KW: 81

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 return temp. °C  
 with thermometer : 40.00...48.00  
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
 assembly : 1 688 901 022

Opening  
 Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
 x Wall thickness : 2.00  
 x Length mm: 450

Start of delivery  
 Prestroke mm: 0.3  
 (from BDC): ±0,02(0.04)

Indicator setting  
 Piston stroke mm: 1.0  
 Outlet : A

Injection-pump setting values  
 Test specifications in parentheses

## Timing-device travel

Speed 1/min: 1500  
 Charge press. hPa: 1000

Setting value mm: 2.30...2.70

## Supply-pump pressure

Speed 1/min: 1500  
 Charge press hPa: 1000  
 Setting value bar: 6.10...6.70

## Full-load del. with charge press.:

Speed 1/min: 1500  
 Charge press. hPa: 1000  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 83.50...84.50  
 1000S.: (5.0)

## Full-load del. w/out charge press.:

Speed 1/min: 650  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 51.00...52.00

## Low-idle speed regulation

Speed 1/min: 350  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 23.00...27.00  
 Del. quantity cm<sup>3</sup>/: 3.5  
 1000S.: (3.5)

## Full-load speed regulation

Speed 1/min: 1800  
 Charge press hPa: 1000  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 31.00...37.00

## Start:

Speed 1/min: 100  
 Del. quantity cm<sup>3</sup>/: 95.00...135.00  
 mind 1000S.: 95.00

Inspection-pump test specifications  
 Test specifications in parentheses

## Timing-device characteristic:

2nd speed 1/min: 1625  
 Charge press hPa: 1000  
 TD travel mm: 3.10...3.90  
 mm: (2.80...4.20)

3rd speed 1/min: 1500  
 Charge press hPa: 1000  
 TD travel mm: 2.30...2.70  
 mm: (1.80...3.20)

4th speed 1/min: 1300  
 Charge press hPa: 1000  
 TD travel mm: 0.50...1.30  
 mm: (0.20...1.60)

Supply-pump pressure characteristic:

1st speed 1/min: 1625  
Charge press. hPa: 1000  
Supply-pump pressure bar: 6.60...7.20  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 6.10...6.70  
3rd speed 1/min: 800  
Charge press. hPa: 1000  
Supply-pump pressure bar: 3.40...4.00

Overflow quantity at overflow valve:

1st speed 1/min: 800  
Charge press. hPa: 1000  
Overflow quantity cm<sup>3</sup>/10s: 41.70...83.40  
(26.70...98.40)  
2nd speed 1/min: 1625  
Charge press. hPa: 1000  
Overflow quantity cm<sup>3</sup>/10s: 55.60...139.00  
(40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800\*  
Charge-air pressure-setting point hPa: 300  
LDA-stroke mm: 6.4  
Del. quantity cm<sup>3</sup>/1000s.: 65.00...66.00  
(63.20...67.80)  
2nd speed 1/min: 1970  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000s.: 0.00...3.00  
3rd speed 1/min: 1880  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000s.: 3.00...11.00  
(2.00...12.00)  
5th speed 1/min: 1800  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000s.: 31.00...37.00  
(30.00...38.00)  
9th speed 1/min: 1625  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000s.: 78.50...81.50  
(77.00...83.00)  
12th speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000s.: 33.50...84.50  
(81.70...86.30)  
15th speed 1/min: 1000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000s.: 91.70...94.30  
(90.70...95.30)

A05

18th speed 1/min: 650  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/1000s.: 51.00...52.00  
(49.20...53.80)  
20th speed 1/min: 800  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000s.: 90.00...93.00  
(88.50...94.50)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1625  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000s.: 0.00...3.00  
1000s.: -

Shutoff electromagnet volt: -

Electr. shutoff:

1st speed 1/min: 350  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/1000s.: 0.00...3.00  
1000s.: -

Shutoff electromagnet volt: 12

Idle delivery:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/1000s.: 23.00...27.00  
(20.00...30.00)  
Dispersion cm<sup>3</sup>/1000s.: 3.5  
(3.5)  
2nd speed 1/min: 480  
Del. quantity cm<sup>3</sup>/1000s.: 0.00...3.00  
1000s.: -  
3rd speed 1/min: 400  
Del. quantity cm<sup>3</sup>/1000s.: 7.00...13.00  
(5.50...14.50)

Automatic starting fuel delivery:

4th speed 1/min: 100  
Del. quantity cm<sup>3</sup>/1000s.: 95.00...135.00  
1000s.: -

Shutoff electromagnet:

Cut-in min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: -  
KF mm: K-OT

MS	mm: 1.1...1.5
SVS max.	mm: 0.9
LDA stroke	mm: 6.4
XK	mm: 18.8...20.8
XL	mm: 11.1...14.5

Remarks:

⋮

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut (46)

Pushing electromagnet.



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 3,1 A5  
Edition : 10.12.91  
replaces : -  
Calibrating oil : ISO-4113  
Injection pump : VE4/11F1625L217-4B  
Type number : O 460 414 034  
Customer Part-No. :

## Customer-specific information

Customer : PENTA  
Engine : TAM 31  
Power KW: 81

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: 0.3  
(from BDC):  $\pm 0,02(0.04)$

Indicator setting  
Piston stroke mm: 1.0  
Outlet : A

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel

Speed 1/min: 1500  
Charge press. hPa: 1000

Setting value mm: 2.30...2.70

## Supply-pump pressure

Speed 1/min: 1500  
Charge press hPa: 1000  
Setting value bar: 6.10...6.70

## Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 83.50...84.50  
1000S.: (5.0)

## Full-load del. w/out charge press.:

Speed 1/min: 650  
Del. quantity cm<sup>3</sup>/  
1000S.: 51.00...52.00

## Low-idle speed regulation

Speed 1/min: 350  
Del. quantity cm<sup>3</sup>/  
1000S.: 23.00...27.00  
Del. quantity cm<sup>3</sup>/: 3.5  
1000S.: (3.5)

## Full-load speed regulation

Speed 1/min: 1800  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 31.00...37.00

## Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 95.00...135.00  
mind 1000S.: 95.00

## Inspection-pump test specifications Test specifications in parentheses

## Timing-device characteristic:

2nd speed 1/min: 1625  
Charge press hPa: 1000  
TD travel mm: 3.10...3.90  
mm: (2.80...4.20)

3rd speed 1/min: 1500  
Charge press hPa: 1000  
TD travel mm: 2.30...2.70  
mm: (1.80...3.20)

4th speed 1/min: 1300  
Charge press hPa: 1000  
TD travel mm: 0.50...1.30  
mm: (0.20...1.60)

Supply-pump pressure characteristic:

1st speed 1/min: 1625  
Charge press. hPa: 1000  
Supply-pump pressure bar: 6.60...7.20  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 6.10...6.70  
3rd speed 1/min: 800  
Charge press. hPa: 1000  
Supply-pump pressure bar: 3.40...4.00

Overflow quantity at overflow valve:

1st speed 1/min: 800  
Charge press. hPa: 1000  
Overflow quantity cm<sup>3</sup>/10s: 41.70...83.40  
2nd speed 1/min: 1625  
Charge press. hPa: 1000  
Overflow quantity cm<sup>3</sup>/10s: 55.60...139.00

Delivery-quant. and breakaway char.:

1st speed 1/min: 800\*  
Charge-air pressure-setting point hPa: 300  
LDA-stroke mm: 6.4  
Del. quantity cm<sup>3</sup>/1000S.: 65.00...66.00  
2nd speed 1/min: 1970  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000S.: 0.00...3.00  
3rd speed 1/min: 1880  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000S.: 3.00...11.00  
5th speed 1/min: 1800  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000S.: 31.00...37.00  
9th speed 1/min: 1625  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000S.: 78.50...81.50  
12th speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000S.: 83.50...84.50  
15th speed 1/min: 1000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000S.: 91.70...94.30

18th speed 1/min: 650  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/1000S.: 51.00...52.00

20th speed 1/min: 800  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000S.: 90.00...93.00

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1625  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000S.: 0.00...3.00

Shutoff electromagnet volt: -

Electr. shutoff:

1st speed 1/min: 350  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/1000S.: 0.00...3.00

Shutoff electromagnet volt: 24

Idle delivery:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/1000S.: 23.00...27.00

Dispersion cm<sup>3</sup>/1000S.: 3.5

2nd speed 1/min: 480  
Del. quantity cm<sup>3</sup>/1000S.: 0.00...3.00

3rd speed 1/min: 400  
Del. quantity cm<sup>3</sup>/1000S.: 7.00...13.00

Automatic starting fuel delivery:

4th speed 1/min: 100  
Del. quantity cm<sup>3</sup>/1000S.: 95.00...135.00

Shutoff electromagnet:

Cut-in min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: -  
KF mm: K-OT

MS	mm: 1.1...1.5
SVS max.	mm: 0.9
LDA stroke	mm: 6.4
XK	mm: 18.8...20.8
XL	mm: 11.1...14.5

Remarks:

⋮

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut (46)

Pushing electromagnet.



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF 2,5 R  
 Edition : 10.12.91  
 replaces : 24.10.89  
 Calibrating oil : ISO-4113  
  
 Injection pump : VE4/11F1900R294  
 Type number : 0 460 414 054  
 Customer Part-No. :

Customer-specific information  
 Customer : SOFIM

Engine : 8140.27.200

TEST BENCH REQUIREMENTS

Calibrating-oil  
 return temp. °C  
 with thermometer : 40.00...48.00  
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
 assembly : 1 688 901 027

Opening  
 Pressure bar: 250.00...253.00

Perforated-plate  
 diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
 x Wall thickness : 2.00  
 x Length mm: 450

Start of delivery  
 Prestroke mm: -  
 (from BDC): -

Injection-pump setting values  
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100  
 Charge press. hPa: 1000  
 Setting value mm: 1.10...1.50  
 Shutoff  
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100  
 Charge press hPa: 1000  
 Setting value bar: 5.80...6.40  
 Shutoff  
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1800  
 Charge press. hPa: 1000  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 54.50...55.50  
 Shutoff  
 electromagnet Volt: 12  
 Dispersion cm<sup>3</sup>/: 4.0  
 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 650  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 27.50...28.50  
 Shutoff  
 electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 13.00...17.00  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 6.0  
 1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2200  
 Charge press hPa: 1000  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 20.50...26.50  
 Shutoff  
 electromagnet Volt: 12

Start:

Speed 1/min: 100  
 Del. quantity cm<sup>3</sup>/: 40.00...80.00  
 mind 1000S.: 40.00  
 Shutoff  
 electromagnet Volt: 12

Load-dependent start of delivery:  
 Inj.-qty.dif.measurement:

Speed 1/min: 1100  
 Charge press hPa: 1000



Inj.-qty. cm<sup>3</sup>/  
 difference 1000S.: 25.0...33.00  
 Shutoff  
 electromagnet Volt: 12  
 TD-travel dif.measurement  
 correttore anticipo iniezione (SV)  
 1.Speed 1/min: 1100  
 TD-travel  
 difference mm: 0.40...0.60  
 Shutoff  
 electromagnet Volt: 12

Inspection-pump test specifications  
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1750  
 Charge press hPa: 1000  
 TD travel mm: 5.00...5.80  
 mm: (4.70...6.10)

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1100  
 Charge press hPa: 1000  
 TD travel mm: 1.10...1.50  
 mm: (0.60...2.00)

Shutoff  
 electromagnet Volt: 12  
 6th speed 1/min: 1500  
 Charge press. hPa: 1000  
 TD travel mm: 3.60...4.40  
 mm: (3.30...4.70)

Shutoff  
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 650  
 Charge press. hPa: 1000  
 Supply-pump  
 pressure bar: 4.10...4.70

Shutoff  
 electromagnet Volt: 12  
 2nd speed 1/min: 1100  
 Charge press. hPa: 1000  
 Supply-pump  
 pressure bar: 5.80...6.40

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1750  
 Charge press. hPa: 1000  
 Supply-pump  
 pressure bar: 7.70...8.30

Shutoff  
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 650

Charge press. hPa: -  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 41.70...83.40  
 quantity cm<sup>3</sup>/10s: (26.70...98.40)  
 2nd speed 1/min: 1900  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 55.60...139.00  
 quantity cm<sup>3</sup>/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800\*  
 Charge-air pressure-setting  
 point hPa: 450  
 LDA-stroke mm: 6,5  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 36.50...37.50  
 1000S.: (33.00...41.00)

2nd speed 1/min: 2350  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 0.00...5.00  
 1000S.: -

5th speed 1/min: 2200  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 20.50...26.50  
 1000S.: (19.00...28.00)

8th speed 1/min: 2100  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 40.50...48.50  
 1000S.: (38.50...50.50)

9th speed 1/min: 1900  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 50.00...56.00  
 1000S.: (49.50...56.50)

11th speed 1/min: 1500  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 52.50...57.50  
 1000S.: (51.00...59.00)

12th speed 1/min: 1800  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 54.50...55.50  
 1000S.: (51.50...58.50)

15th speed 1/min: 1100

Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 51.50...56.50  
1000S.: (50.00...58.00)  
18th speed 1/min: 650  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 27.50...28.50  
1000S.: (24.50...31.50)  
20th speed 1/min: 650  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 50.50...59.50  
1000S.: (49.50...60.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 13.00...17.00  
1000S.: (11.00...19.00)

Dispersion cm<sup>3</sup>/: 6.0  
1000S.: (6.5)

2nd speed 1/min: 450  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...5.00  
1000S.: -

3rd speed 1/min: 325  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 39.00...49.00  
1000S.: (38.00...50.00)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1100  
Charge press. hPa: 1000  
Inj.-qty. cm<sup>3</sup>/ : 24.5...26.5 #  
difference 1000S.: -  
KSB/AFB  
valve Volt: 12  
4th speed 1/min: 1100  
Charge press. hPa: 1000  
Inj.-qty. cm<sup>3</sup>/: 2.00...8.00  
difference 1000S.: -

Shutoff  
electromagnet Volt: 12

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1100  
Charge press. hPa: 1000  
TD-travel : 0.40...1.20  
difference mm: -  
Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1100  
Charge press. hPa: 1000  
Supply pump-  
pressure : 0.10...0.30 #  
difference bar: -

Automatic starting fuel delivery:

1st speed 1/min: 350  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 42.00...78.00  
1000S.: -

2nd speed 1/min: 450  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 12.00...48.00  
1000S.: -

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 40.00...80.00  
1000S.: -

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.2...3.4  
KF mm: K-OT  
MS mm: 0.6...1.0  
SVS max. mm: 2.5  
LDA stroke mm: 6.5  
XK mm: 21.8...23.8  
XL mm: 12.3...15.7

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut (46)



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 2,5 A1
Edition : 09.12.91
replaces : 21.07.88
Calibrating oil : ISO-4113
Injection pump : VE4/11F2100R286-1
Type number : 0 460 414 059
Customer Part-No. :

Customer-specific information
Customer : FIAT-AUTO

Engine : M711 AT 19.0

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 6.60...7.00
AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 1000
Setting value bar: 7.30...7.90
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1750
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 47.30...48.30
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 750
Del. quantity cm3/
1000S.: 23.30...24.30
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

11

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
1000S.: 6.00...10.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 2400
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 17.00...23.00

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 40.00...80.00  
mind 1000S.: 40.00  
KSB/AFB  
Valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1750  
Charge press hPa: -  
Inj.-qty. cm<sup>3</sup>/  
difference 1000S.: 9.00...15.00 \*  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 1750  
Charge press hPa: -  
TD-travel  
difference mm: 0.50...0.70 \*  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100  
Charge press hPa: 1000  
TD travel mm: 8.90...9.70  
mm: (8.60...10.00)  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1500  
Charge press hPa: 1000  
TD travel mm: 6.60...7.00  
mm: (6.30...7.30)  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 750  
Charge press hPa: 1000

TD travel mm: 2.30...3.10  
mm: (2.00...3.40)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
8th speed 1/min: 1000  
Charge press. hPa: 1000  
TD travel mm: 3.20...5.20  
mm: (3.00...5.40)

KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
9th speed 1/min: 450  
Charge press. hPa: 1000  
TD travel mm: 3.30...3.50  
mm: (2.40...4.40)

KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 7.30...7.90  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 2100  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 8.50...9.10  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 750  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 5.50...6.10  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Charge press. hPa: 1000  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 75.00...119.540  
quantity cm<sup>3</sup>/10s: (60.00...134.50)

2nd speed 1/min: 2100  
Charge press. hPa: 1000  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Overflow : 97.30...180.70  
quantity cm<sup>3</sup>/10s: (82.30...195.70)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750\*  
Charge-air pressure-setting  
point hPa: 400  
LDA-stroke mm: 6,3  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 32.50...33.50  
1000S.: (30.50...35.50)

3rd speed 1/min: 2500  
Charge press. hPa: 1000  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...5.00  
1000S.: -

5th speed 1/min: 2400  
Charge press. hPa: 1000  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 17.00...23.00  
1000S.: (16.00...24.00)

8th speed 1/min: 2300  
Charge press. hPa: 1000  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 28.00...35.00  
1000S.: -

9th speed 1/min: 2100  
Charge press. hPa: 1000  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 45.50...48.50  
1000S.: (44.50...49.50)

12th speed 1/min: 1750  
Charge press. hPa: 1000  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Del. quynity cm<sup>3</sup>/: 47.30...48.30  
1000S.: (45.00...49.80)

13th speed 1/min: 750  
Charge press. hPa: 720  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 45.50...49.50  
1000S.: -

18th speed 1/min: 750  
Charge press. hPa: -  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 23.30...24.30  
1000S.: (21.30...26.30)

20th speed 1/min: 750  
Charge press. hPa: 1000  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 45.50...47.50  
1000S.: -

21th speed 1/min: 600  
Charge press. hPa: -  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 17.0...20.00  
1000S.: -

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -  
Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 450  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 6.00...10.00  
1000S.: (3.50...12.50)

Dispersion cm<sup>3</sup>/: 3.0  
1000S.: (3.5)  
2nd speed 1/min: 800  
KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...2.40  
1000S.: -  
3rd speed 1/min: 600  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1750  
Inj.-qty. cm<sup>3</sup>/ : 11.0...13.0 #  
difference 1000S.: -  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1750  
Supply pump-  
pressure : 0.50...0.70 #  
difference bar: -  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

2nd speed 1/min: 450  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 25.00...55.00  
1000S.: -

4th speed 1/min: 100  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 40.00...80.00  
1000S.: -

Shutoff electromagnet:

Cut-in  
min voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm: 3,2...3,4
KF	mm: -
MS	mm: 0.6...1.0
LDA stroke	mm: 6,3
XK	mm: 17.0...19.0
XL	mm: 10.3...13.7

Remarks:

Overflow restriction 0.75 mm - Part No.  
..343,..344 :

Operate control lever after each  
manifold-pressure compensator pressure  
change.

\* Correction at adjusting nut (46)

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF 2,5 R1  
Edition : 10.12.91  
replaces : 24.10.89  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/11F1900R294-1  
Type number : 0 460 414 066  
Customer Part-No. :

Customer-specific information  
Customer : SOFIM

Engine : 8140.27.200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel

Speed 1/min: 1100  
Charge press. hPa: 1000  
Setting value mm: 1.10...1.50  
Shutoff  
electromagnet Volt: 12

## Supply-pump pressure

Speed 1/min: 1100  
Charge press hPa: 1000  
Setting value bar: 5.80...6.40  
Shutoff  
electromagnet Volt: 12

## Full-load del. with charge press.:

Speed 1/min: 1800  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 54.50...55.50  
Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/: 4.0  
1000S.: (4.5)

## Full-load del. w/out charge press.:

Speed 1/min: 650  
Del. quantity cm<sup>3</sup>/  
1000S.: 27.50...28.50  
Shutoff  
electromagnet Volt: 12

## Low-idle speed regulation

Speed 1/min: 375  
Del. quantity cm<sup>3</sup>/  
1000S.: 13.00...17.00

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 6.0  
1000S.: (6.5)

## Full-load speed regulation

Speed 1/min: 2200  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 20.50...26.50  
Shutoff  
electromagnet Volt: 12

## Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 40.00...80.00  
mind 1000S.: 40.00  
Shutoff  
electromagnet Volt: 12

## Load-dependent start of delivery: Inj.-qty.dif.measurement:

Speed 1/min: 1100  
Charge press hPa: 1000



Inj.-qty. cm3/  
difference 1000S.: 25.0...33.00  
Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 1100  
TD-travel  
difference mm: 0.40...0.60  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1750  
Charge press hPa: 1000  
TD travel mm: 5.00...5.80  
mm: (4.70...6.10)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1100  
Charge press hPa: 1000  
TD travel mm: 1.10...1.50  
mm: (0.60...2.00)

Shutoff  
electromagnet Volt: 12  
6th speed 1/min: 1500  
Charge press. hPa: 1000  
TD travel mm: 3.60...4.40  
mm: (3.30...4.70)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 650  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 4.10...4.70

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1100  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 5.80...6.40

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1750  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 7.70...8.30  
Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 650

Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm3/10s: (26.70...98.40)  
2nd speed 1/min: 1900  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...139.00  
quantity cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800\*  
Charge-air pressure-setting  
point hPa: 450  
LDA-stroke mm: 6,5  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 36.50...37.50  
1000S.: (33.00...41.00)

2nd speed 1/min: 2350  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 0.00...5.00  
1000S.: -

5th speed 1/min: 2200  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 20.50...26.50  
1000S.: (19.00...28.00)

8th speed 1/min: 2100  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 40.50...48.50  
1000S.: (38.50...50.50)

9th speed 1/min: 1900  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 50.00...56.00  
1000S.: (49.50...56.50)

11th speed 1/min: 1500  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 52.50...57.50  
1000S.: (51.00...59.00)

12th speed 1/min: 1800  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 54.50...55.50  
1000S.: (51.50...58.50)

15th speed 1/min: 1100

Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 51.50...56.50  
                   1000S.: (50.00...58.00)  
 18th speed 1/min: 650  
 Charge press. hPa: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 27.50...28.50  
                   1000S.: (24.50...31.50)  
 20th speed 1/min: 650  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 50.50...59.50  
                   1000S.: (49.50...60.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 Shutoff  
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 375  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 13.00...17.00  
                   1000S.: (11.00...19.00)

Dispersion cm<sup>3</sup>/: 6.0  
 1000S.: (6.5)

2nd speed 1/min: 450  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 0.00...5.00  
                   1000S.: -

3rd speed 1/min: 325  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 39.00...49.00  
                   1000S.: (38.00...50.00)

Load-dependent start of delivery:  
 Inj.-qty.dif.measurement:

1st speed 1/min: 1100  
 Charge press. hPa: 1000  
 Inj.-qty. cm<sup>3</sup>/ : 24.5...26.5 #  
 difference 1000S.: -  
 KSB/AFB  
 valve Volt: 12  
 4th speed 1/min: 1100  
 Charge press. hPa: 1000  
 Inj.-qty. cm<sup>3</sup>/: 2.00...8.00  
 difference 1000S.: -

Shutoff  
 electromagnet Volt: 12

TD-travel dif.measurement:  
 correttore anticipo iniezione (SV):  
 1st speed 1/min: 1100  
 Charge press. hPa: 1000  
 TD-travel : 0.40...1.20  
 difference mm: -  
 Shutoff  
 electromagnet Volt: 12

SP press.-dif.measurement:  
 pompa di mandata (FP):  
 1st speed 1/min: 1100  
 Charge press. hPa: 1000  
 Supply pump-  
 pressure : 0.10...0.30 #  
 difference bar: -

Automatic starting fuel delivery:

1st speed 1/min: 350  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 42.00...78.00  
                   1000S.: -

2nd speed 1/min: 450  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 12.00...48.00  
                   1000S.: -

4th speed 1/min: 100  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 40.00...80.00  
                   1000S.: -

Shutoff electromagnet:

Cut-in  
 min voltage : 10.0  
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
 K mm: 3.2...3.4  
 KF mm: K-0T  
 MS mm: 0.6...1.0  
 SVS max. mm: 2.5  
 LDA stroke mm: 6.5  
 XK mm: 21.8...23.8  
 XL mm: 12.3...15.7

Remarks:

:  
 :

Operate control lever after each manifold pressure compensator pressure change.

\* Correction at adjusting nut (46)



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 F  
 Edition : 05.12.91  
 replaces : 07.11.89  
 Calibrating oil : ISO-4113  
 Injection pump : VE4/11F2000R366  
 Type number : 0 460 414 073  
 Customer Part-No. :

Customer-specific information  
 Customer : FORD

Engine : 2.5l DI Gr.Spec

TEST BENCH REQUIREMENTS

Calibrating-oil  
 return temp. °C  
 with thermometer : 40.00...48.00  
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
 assembly : 1 688 901 023

Opening  
 Pressure bar: 172.00...175.00

Perforated-plate  
 diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
 x Wall thickness : 2.00  
 x Length mm: 450

Start of delivery  
 Prestroke mm: -  
 (from BDC): -

Start of delivery block  
 Piston stroke mm: 0.78  
 mm: 0.73...0.83

Outlet : B

Injection-pump setting values  
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250  
 Setting value mm: 2.50...2.90  
 Shutoff  
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000  
 Setting value bar: 4.80...5.40  
 Shutoff  
 electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 500  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 30.50...31.50 F

Shutoff  
 electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 16.00...20.00

Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 3.0  
 1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2100  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 30.50...34.50  
 Dispersion cm<sup>3</sup>/: 3.0  
 1000S.: (4.0)

Start:

Speed 1/min: 100  
 Del. quantity cm<sup>3</sup>/: 62.00...102.00  
 mind 1000S.: 62.00  
 Shutoff  
 electromagnet Volt: 12

Inspection-pump test specifications  
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1950  
 TD travel mm: 5.80...6.60  
 mm: (5.50...6.90)

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1250  
 TD travel mm: 2.50...2.90  
 mm: (2.20...3.20)

Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 800  
 TD travel mm: 0.40...1.20  
 mm: (0.10...1.50)

Shutoff  
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500  
 Supply-pump pressure bar: 3.10...3.70  
 Shutoff electromagnet Volt: 12  
 2nd speed 1/min: 1000  
 Supply-pump pressure bar: 4.80...5.40  
 Shutoff electromagnet Volt: 12  
 3rd speed 1/min: 1250  
 Supply-pump pressure bar: 5.60...6.20  
 Shutoff electromagnet Volt: 12  
 4th speed 1/min: 1950  
 Supply-pump pressure bar: 7.70...8.30  
 Shutoff electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
 Shutoff electromagnet Volt: 12  
 Overflow quantity cm<sup>3</sup>/10s: 55.60...100.00  
 (40.60...115.00)  
 2nd speed 1/min: 1950  
 Shutoff electromagnet Volt: 12  
 Overflow quantity cm<sup>3</sup>/10s: 83.40...152.90  
 (68.40...168.90)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950  
 HBA-stroke mm: 10,0  
 Shutoff electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 37,7...41,3 D  
 1000S.: (37,0...42,0) D  
 2nd speed 1/min: 2400  
 Shutoff electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 0.00...10.00  
 1000S.: -  
 3rd speed 1/min: 2200

Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 18.00...26.00  
 1000S.: (16.00...28.00)

5th speed 1/min: 2100  
 Shutoff electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 30.50...34.50  
 1000S.: (27.50...37.50)

10th speed 1/min: 1700  
 Shutoff electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 38.70...42.30  
 1000S.: (38.00...43.00)

11th speed 1/min: 1000  
 Shutoff electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 35,50...36,50 E  
 1000S.: (33,50...38,50) E

12th speed 1/min: 500  
 Shutoff electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 30.50...31.50 F  
 1000S.: (28,00...34,00) F

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: -  
 Shutoff electromagnet volt: -

Idle delivery:

1st speed 1/min: 425  
 Shutoff electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 16.00...20.00  
 1000S.: (14.00...22.00)

Dispersion cm<sup>3</sup>/: 3.0  
 1000S.: (4.0)

2nd speed 1/min: 500  
 Shutoff electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 5.00...13.00  
 1000S.: (3.00...15.00)

Part-load del.at 3rd inj.-qty.  
 terza fermo della portata  
 stop (EGR set)  
 scarico) (ARF)  
 gaz d'échappement-ARF)

1st speed 1/min: 1250  
 Shutoff electromagnet Volt: 12

Setting = 12.0 mm

Del. quantity cm<sup>3</sup>/: 23.00...24.00  
1000S.: (21.00...26.00)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 30.00...60.00

1000S.: -

2nd speed 1/min: 480

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 24.00...34.00

1000S.: -

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 62.00...102.00

1000S.: -

Shutoff electromagnet:

Cut-in

min voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: 3,2...3,4

KF mm: K-0T

MS mm: 1,3...1,7

SVS max. mm: 3,8

HBA stroke mm: 10,0

TLA-E mm: 2,7

XK mm: 17,0...19,0

XL mm: 10,9...14,5

Pump/engine assignment:

Stroke in blocking position 0.73...

0.83 mm, referenced to outlet "B".

Attach timing-device cover

KDEP 1151.

F = Adjustment point for low full-load delivery

E = Fuel-delivery adjustment point in HBA range. (Correction by way of HBA adjusting screw).

D = Adjustment point for high full-load delivery

Adjust part-load delivery:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 G
Edition : 05.12.91
replaces : 07.11.89
Calibrating oil : ISO-4113
Injection pump : VE4/11F2000R366-1
Type number : 0 460 414 074
Customer Part-No. :

Customer-specific information
Customer : FORD

Engine : 2.5L DI Gr.Spec

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 023

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 0.78
mm: 0.73...0.83

Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 2.50...2.90
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 4.80...5.40
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 30.50...31.50 F

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 18.00...22.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2100
Del. quantity cm3/
1000S.: 30.50...34.50
Dispersion cm3/: 3.0
1000S.: (4.0)

Start:

Speed 1/min: 100
Del. quantity cm3/: 62.00...102.00
mind 1000S.: 62.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1950
TD travel mm: 5.80...6.60
mm: (5.50...6.90)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 2.50...2.90
mm: (2.20...3.20)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 800  
TD travel mm: 0.40...1.20  
mm: (0.10...1.50)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump  
pressure bar: 3.10...3.70

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1000  
Supply-pump  
pressure bar: 4.80...5.40

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
Supply-pump  
pressure bar: 5.60...6.20

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 1950  
Supply-pump  
pressure bar: 7.70...8.30

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 55.60...100.00  
(40.60...115.00)

2nd speed 1/min: 1950  
Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 83.40...152.90  
(68.40...168.90)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950  
HBA-stroke mm: 10,0  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 37,7...41,3 D  
1000S.: (37,0...42,0) D

2nd speed 1/min: 2400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...10.00  
1000S.: -

3rd speed 1/min: 2200

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 18.00...26.00  
1000S.: (16.00...28.00)

5th speed 1/min: 2100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 30.50...34.50  
1000S.: (27.50...37.50)

10th speed 1/min: 1700  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 38.70...42.30  
1000S.: (38.00...43.00)

11th speed 1/min: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35,50...36,50 E  
1000S.: (33,50...38,50)E

12th speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 30.50...31.50 F  
1000S.: (28,00...34,00)F

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 425  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 18.00...22.00  
1000S.: (16.00...24.00)

Dispersion cm<sup>3</sup>/: 3.0  
1000S.: (4.0)  
2nd speed 1/min: 500

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 7.00...15.00  
1000S.: (5.00...17.00)

Part-load del. at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)

1st speed 1/min: 1250  
Shutoff  
electromagnet Volt: 12



Del. quantity cm<sup>3</sup>/: 23.00...24.00  
1000S.: (21.00...26.00)

Setting = 12.0 mm

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 30.00...60.00

1000S.: -

2nd speed 1/min: 480

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 24.00...34.00

1000S.: -

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 62.00...102.00

1000S.: -

Shutoff electromagnet:

Cut-in

min voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: 3,2...3,4

KF mm: K-OT

MS mm: 1,3...1,7

SVS max. mm: 3,8

HBA stroke mm: 10,0

TLA-E mm: 2,7

XK mm: 17,0...19,0

XL mm: 10,9...14,5

Pump/engine assignment:

Stroke in blocking position 0.73...

0.83 mm, referenced to outlet "B".

Attach timing-device cover

KDEP 1151.

F = Adjustment point for low full-load delivery

E = Fuel-delivery adjustment point in HBA range. (Correction by way of HBA adjusting screw).

D = Adjustment point for high full-load delivery

Adjust part-load delivery:

A27

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 H  
Edition : 05.12.91  
replaces : 07.11.89  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/11F2000R366-2  
Type number : 0 460 414 075  
Customer Part-No. :

Customer-specific information  
Customer : FORD

Engine : 2.5l DI Gr.Spec

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 023

Opening  
Pressure bar: 172.00...175.00

Perforated-plate  
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Start of delivery block  
Piston stroke mm: 0.78  
mm: 0.73...0.83

Outlet : B

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250  
Setting value mm: 2.50...2.90  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000  
Setting value bar: 4.80...5.40  
Shutoff  
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm<sup>3</sup>/  
1000S.: 30.50...31.50 F

Shutoff  
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425  
Del. quantity cm<sup>3</sup>/  
1000S.: 16.00...20.00

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 3.0  
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2100  
Del. quantity cm<sup>3</sup>/  
1000S.: 30.50...34.50  
Dispersion cm<sup>3</sup>/: 3.0  
1000S.: (4.0)

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 62.00...102.00  
mind 1000S.: 62.00  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1950  
TD travel mm: 5.80...6.60  
mm: (5.50...6.90)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
TD travel mm: 2.50...2.90  
mm: (2.20...3.20)

Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 800  
 TD travel mm: 0.40...1.20  
 mm: (0.10...1.50)

Shutoff  
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500  
 Supply-pump pressure bar: 3.10...3.70  
 Shutoff electromagnet Volt: 12  
 2nd speed 1/min: 1000  
 Supply-pump pressure bar: 4.80...5.40  
 Shutoff electromagnet Volt: 12  
 3rd speed 1/min: 1250  
 Supply-pump pressure bar: 5.60...6.20  
 Shutoff electromagnet Volt: 12  
 4th speed 1/min: 1950  
 Supply-pump pressure bar: 7.70...8.30  
 Shutoff electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
 Shutoff electromagnet Volt: 12  
 Overflow quantity cm<sup>3</sup>/10s: 55.60...100.00  
 (40.60...115.00)  
 2nd speed 1/min: 1950  
 Shutoff electromagnet Volt: 12  
 Overflow quantity cm<sup>3</sup>/10s: 83.40...152.90  
 (68.40...168.90)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950  
 HBA-stroke mm: 10,0  
 Shutoff electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 37,7...41,3 D  
 1000S.: (37,0...42,0) D  
 2nd speed 1/min: 2400  
 Shutoff electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 0.00...10.00  
 1000S.: -  
 3rd speed 1/min: 2200

Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 18.00...26.00  
 1000S.: (16.00...28.00)

5th speed 1/min: 2100  
 Shutoff electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 30.50...34.50  
 1000S.: (27.50...37.50)

10th speed 1/min: 1700  
 Shutoff electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 38.70...42.30  
 1000S.: (38.00...43.00)

11th speed 1/min: 1000  
 Shutoff electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 35,50...36,50 E  
 1000S.: (33,50...38,50)E

12th speed 1/min: 500  
 Shutoff electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 30.50...31.50 F  
 1000S.: (28,00...34,00)F

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: -

Shutoff electromagnet volt: -

Idle delivery:

1st speed 1/min: 425  
 Shutoff electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 16.00...20.00  
 1000S.: (14.00...22.00)

Dispersion cm<sup>3</sup>/: 3.0  
 1000S.: (4.0)

2nd speed 1/min: 500  
 Shutoff electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 5.00...13.00  
 1000S.: (3.00...15.00)

Part-load del.at 3rd inj.-qty.  
 terza fermo della portata  
 stop (EGR set)  
 scarico) (ARF)  
 gaz d'échappement-ARF)

1st speed 1/min: 1250  
 Shutoff electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 23.00...24.00  
1000s.: (21.00...26.00)

Setting = 12.0 mm

Automatic starting fuel delivery:

1st speed 1/min: 300  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 30.00...60.00  
1000s.: -

2nd speed 1/min: 480  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 24.00...34.00  
1000s.: -

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 62.00...102.00  
1000s.: -

Shutoff electromagnet:

Cut-in  
min voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm: 3,2...3,4
KF	mm: K-0T
MS	mm: 1,3...1,7
SVS max.	mm: 3,8
HBA stroke	mm: 10,0
TLA-E	mm: 2,7
XK	mm: 17,0...19,0
XL	mm: 10,9...14,5

Pump/engine assignment:

Stroke in blocking position 0.73...  
0.83 mm, referenced to outlet "B".  
Attach timing-device cover  
KDEP 1151.

F = Adjustment point for low full-load  
delivery

E = Fuel-delivery adjustment point in  
HBA range. (Correction by way of HBA  
adjusting screw).

D = Adjustment point for high full-  
load delivery

Adjust part-load delivery:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 3.1 H3
Edition : 10.12.91
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/11F1900L217-5
Type number : 0 460 414 079
Customer Part-No. :

Customer-specific information
Customer : PENTA

Engine : TMD 31 B

Power KW: 74
Speed 1/min: 1900

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.3
(from BDC): +0.02(0.04)

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500

Charge press. hPa: 1000
Setting value mm: 3.30...3.70

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 1000
Setting value bar: 6.40...7.00

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 64.00...65.00
Dispersion cm3/: 5.0
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 650
Del. quantity cm3/
1000S.: 46.50...47.50

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 18.00...22.00
Del. quantity cm3/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 2000
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 39.00...45.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 83.00...133.00
mind 1000S.: 83.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1900
Charge press hPa: 1000
TD travel mm: 4.30...5.10
mm: (4.00...5.40)

3rd speed 1/min: 1500
Charge press hPa: 1000
TD travel mm: 3.30...3.70
mm: (2.80...4.20)

4th speed 1/min: 1300
Charge press hPa: 1000

TD travel mm: 1.60...2.40  
mm: (1.30...2.70)

Supply-pump pressure characteristic:

1st speed 1/min: 1900  
Charge press. hPa: 1000  
Supply-pump pressure bar: 7.70...8.30  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 6.40...7.00  
3rd speed 1/min: 800  
Charge press. hPa: 1000  
Supply-pump pressure bar: 4.10...4.70

Overflow quantity at overflow valve:

1st speed 1/min: 650  
Charge press. hPa: -  
Overflow quantity cm<sup>3</sup>/10s: 41.70...83.40  
(26.70...98.40)  
2nd speed 1/min: 1900  
Charge press. hPa: 1000  
Overflow quantity cm<sup>3</sup>/10s: 55.60...139.00  
(40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 900  
Charge-air pressure-setting point hPa: 260  
LDA-stroke mm: 6.3  
Del. quantity cm<sup>3</sup>/1000S.: 62.00...63.00  
(59.50...65.50)  
3rd speed 1/min: 2150  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000S.: 0.00...3.00  
5th speed 1/min: 2000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000S.: 39.00...45.00  
(38.00...46.00)  
9th speed 1/min: 1900  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000S.: 60.00...63.00  
(58.50...64.50)  
12th speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000S.: 64.00...65.00  
(62.20...66.80)  
18th speed 1/min: 650  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/1000S.: 46.50...47.50  
(44.50...49.50)

Mech. shutoff:

Mech. Abst.ellung:

1st speed 1/min: 1900  
Del. quantity cm<sup>3</sup>/1000S.: 0.00...3.00  
1000S.: -

Shutoff electromagnet volt: -

Electr. shutoff:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/1000S.: 0.00...3.00  
1000S.: -

Shutoff electromagnet volt: 12

Idle delivery:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/1000S.: 18.00...22.00  
(15.00...25.00)

Dispersion cm<sup>3</sup>/1000S.: 3.5  
(3.5)

2nd speed 1/min: 400  
Del. quantity cm<sup>3</sup>/1000S.: 4.50...10.50  
(3.00...12.00)

4th speed 1/min: 450  
Del. quantity cm<sup>3</sup>/1000S.: 0.00...3.00  
1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/1000S.: 63.00...103.00  
1000S.: -

2nd speed 1/min: 500  
Del. quantity cm<sup>3</sup>/1000S.: 50.00...70.00  
1000S.: -

4th speed 1/min: 100  
Del. quantity cm<sup>3</sup>/1000S.: 83.00...133.00  
1000S.: -

Shutoff electromagnet:

Cut-in min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: -  
KF mm: K-OT  
MS mm: 1.1...1.5  
SVS max. mm: 5.5  
LDA stroke mm: 6.3

Remarks:

⋮  
Operate control lever after each  
manifold-pressure compensator pressure  
change.

\* Correction at adjusting nut (46)



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 4,2 A  
 Edition : 13.09.91  
 replaces : -  
 Calibrating oil : ISO-4113  
 Injection pump : VE4/11F2250R413  
 Type number : 0 460 414 082  
 Customer Part-No. :

Customer-specific information  
 Customer : PERKINS

Engine : T 4.20 (V)

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil  
 return temp. °C  
 with thermometer : 40.00...48.00  
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
 assembly : 1 688 901 022

Opening  
 Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
 x Wall thickness : 2.00  
 x Length mm: 450

Start of delivery  
 Prestroke mm: -  
 (from BDC): -

Start of delivery block  
 Piston stroke mm: 1,2  
 mm: ±0,02(0,06)

Outlet : A

Injection-pump setting values  
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500  
 Charge press. hPa: 800

Setting value mm: 4.00...4.40  
 AFB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500  
 Charge press hPa: 800  
 Setting value bar: 7.30...7.90  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250  
 Charge press. hPa: 800  
 Del. quantity cm3/  
 1000S.: 66.50...67.50

KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Dispersion cm3/  
 1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500  
 Del. quantity cm3/  
 1000S.: 29.50...30.50

KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Dispersion cm3/  
 1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 400  
 Del. quantity cm3/  
 1000S.: 9.00...11.00

KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/  
 1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2500  
 Charge press hPa: 800  
 Del. quantity cm3/  
 1000S.: 23.50...25.50



KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 70.00...100.00  
mind 1000S.: 70.00  
KSB/AFB  
Valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000  
Charge press hPa: 800  
TD travel mm: 6.10...6.90  
mm: (5.80...7.20)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

3rd speed 1/min: 1500  
Charge press hPa: 800  
TD travel mm: 4.00...4.40  
mm: (3.60...4.80)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

4th speed 1/min: 1000  
Charge press hPa: 800  
TD travel mm: 1.90...2.70  
mm: (1.60...3.00)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
8th speed 1/min: 800  
Charge press. hPa: 800  
TD travel mm: 1.50...3.50  
mm: (1.30...3.70)

KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
9th speed 1/min: 500  
Charge press. hPa: 800  
TD travel mm: 2.10...2.30  
mm: (1.40...3.00)

KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1000  
Charge press. hPa: 800  
Supply-pump  
pressure bar: 6.00...6.60

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

2nd speed 1/min: 1500  
Charge press. hPa: 800  
Supply-pump  
pressure bar: 7.30...7.90

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

3rd speed 1/min: 2000  
Charge press. hPa: 800  
Supply-pump  
pressure bar: 8.30...8.90

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: 800  
KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12  
Overflow : 62.55...104.25  
quantity cm<sup>3</sup>/10s: (47.55...119.25)

2nd speed 1/min: 2250  
Charge press. hPa: 800  
KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12  
Overflow : 69.50...152.90  
quantity cm<sup>3</sup>/10s: (54.50...167.90)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1000  
Charge-air pressure-setting  
point hPa: 300  
LDA-stroke mm: 6,5

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet volt: 12  
Del. quantity cm<sup>3</sup>/: 58.50...59.50  
1000S.: (55.50...62.50)

3rd speed 1/min: 2600  
 Charge press. hPa: 800  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 0.00...10.00  
 1000S.: (0.00...10.00)  
 5th speed 1/min: 2500  
 Charge press. hPa: 800  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 23.50...25.50  
 1000S.: (20.50...28.50)  
 9th speed 1/min: 2250  
 Charge press. hPa: 800  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 70.00...74.00  
 1000S.: (69.00...75.00)  
 12th speed 1/min: 1250  
 Charge press. hPa: 800  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 66.50...67.50  
 1000S.: (64.50...69.50)  
 15th speed 1/min: 1000  
 Charge press. hPa: 800  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 69.50...72.50  
 1000S.: (67.50...74.50)  
 18th speed 1/min: 500  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 29.50...30.50  
 1000S.: (27.00...33.00)  
 20th speed 1/min: 625  
 Charge press. hPa: -  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 27.50...32.50  
 1000S.: (26.00...34.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)

Shutoff  
 electromagnet volt: -  
 KSB/AFB  
 valve Volt: 12

Idle delivery:

1st speed 1/min: 400  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 9.00...11.00  
 1000S.: (6.00...14.00)

Dispersion cm<sup>3</sup>/: 3.0  
 1000S.: (4.0)

2nd speed 1/min: 500  
 KSB/AFB  
 valve Volt: 12

Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 0.00...5.00  
 1000S.: (0.00...5.00)

Automatic starting fuel delivery:

2nd speed 1/min: 350  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 20.00...40.00  
 1000S.: (20.00...40.00)

4th speed 1/min: 100  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 70.00...100.00  
 1000S.: (70.00...100.00)

Shutoff electromagnet:

Cut-in  
 min voltage : 10.0  
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
 K mm: 3.2...3.3  
 KF mm: K-OT  
 MS mm: 0.6...1.0  
 SVS max. mm: -  
 LDA stroke mm: 6.5

XK mm: 20.0...22.0  
XL mm: 10.7...14.1

Remarks:

⋮



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 K  
Edition : 06.12.91  
replaces : -  
Calibrating oil : ISO 4113

Injection pump : VE4/11F2000R431  
Type number : 0 460 414 086

Customer-specific information  
Customer : FORD

Engine : 2,5 L.

TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 023

Opening  
Pressure bar: 172.0..175.00

Perforated-plate  
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Start of delivery block  
Piston stroke mm: 0.78  
mm: 0.73...0.83

Outlet : B

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250  
Setting value mm: 2,5...2,9

B10

Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250  
Setting value bar: 5,6...6,2

Shutoff  
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm<sup>3</sup>/  
1000S.: 30,5...31,5 F

Shutoff  
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425  
Del. quantity cm<sup>3</sup>/  
1000S.: 16,0...20,0

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 3,0  
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2100  
Del. quantity cm<sup>3</sup>/  
1000S.: 30,5...34,5

Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: -  
mind 1000S.: 62,0

Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800  
TD travel mm: 0,4...1,2  
mm: (0,1...1,5)

electromagnet Volt: 12  
2nd speed 1/min: 1250  
TD travel mm: 2,5...2,9  
mm: (2,2...3,2)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1950

TD travel mm: 5,8...6,6  
mm: (5,5...6,9)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump pressure bar: 3,1...3,7  
Shutoff  
electromagnet Volt: 12

2nd speed 1/min: 1000  
Supply-pump pressure bar: 4,8...5,4  
Shutoff  
electromagnet Volt: 12

3rd speed 1/min: 1250  
Supply-pump pressure bar: 5,6...6,2  
Shutoff  
electromagnet Volt: 12

4th speed 1/min: 1950  
Supply-pump pressure bar: 7,7...8,3  
Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 55,5...100,0  
2nd speed 1/min: 1950  
Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 83,3...152,7

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950  
HBA-stroke mm: 9,8  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 37,7...41,3 D  
1000S.: (37,0...42,0)D

2nd speed 1/min: 2400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0,0...10,0  
1000S.: -

3rd speed 1/min: 2200  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 18,0...26,0  
1000S.: (16,0...28,0)

4th speed 1/min: 2100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 30,5...34,5  
1000S.: (27,5...37,5)

5th speed 1/min: 1700  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 38,7...42,3  
1000S.: (38,0...43,0)

6th speed 1/min: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35,5...36,5 E  
1000S.: (33,5...38,5)E

7th speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 30,5...31,5 F  
1000S.: (28,0...34,0)F

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
1000S.: -

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 425  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 16,0...20,0  
1000S.: (14,0...22,0)

2nd speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 5,0...13,0  
1000S.: (3,0...15,0)

Part-load del.at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: 20,0

1st speed 1/min: 1250  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 23,0...24,0  
1000S.: (21,0...26,0)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 30,0...60,0  
1000S.: -

2nd speed 1/min: 480  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 24,0...34,0  
1000S.: -

Shutoff electromagnet:

Cut-in  
min voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm: 3,2...3,4  
KF mm: K-OT  
MS mm: 1,3...1,7  
HBA stroke mm: 9,8

Pump/engine assignment:  
Stroke in blocking position 0.73...  
0.83 mm, referenced to outlet "B".  
Attach timing-device cover  
KDEP 1151.

F = Adjustment point for low full-load  
delivery  
E = Fuel-delivery adjustment point in  
HBA range. (Correction by way of HBA  
adjusting screw).  
D = Adjustment point for high full-  
load delivery

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 5,6 P5
Edition : 10.12.91
replaces : 20.07.87
Calibrating oil : ISO-4113
Injection pump : VE6/11F1500R55-9
Type number : 0 460 416 056
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0226 MF

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 150.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.6
(from BDC): +0,02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 6.00...6.40
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000

Setting value bar: 5.70...6.30
Shutoff
electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm3/
1000S.: 63.50...64.50

Shutoff
electromagnet Volt: 24
Dispersion cm3/: 3.5
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 6.00...12.00

Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 3.0
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1550
Del. quantity cm3/
1000S.: 52.00...58.00

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 50.00...90.00
mind 1000S.: 50.00

Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1400
TD travel mm: 8.60...9.40
mm: (8.30...9.70)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
TD travel mm: 6.00...6.40
mm: (5.50...6.90)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 600
TD travel mm: 3.30...4.10
mm: (3.00...4.40)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump pressure bar: 4.20...4.80  
Shutoff electromagnet Volt: 24  
2nd speed 1/min: 1000  
Supply-pump pressure bar: 5.70...6.30  
Shutoff electromagnet Volt: 24  
3rd speed 1/min: 1400  
Supply-pump pressure bar: 7.20...7.80  
Shutoff electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Shutoff electromagnet Volt: 24  
Overflow quantity cm<sup>3</sup>/10s: (41.70...83.40)  
(26.70...98.40)  
2nd speed 1/min: 1500  
Shutoff electromagnet Volt: 24  
Overflow quantity cm<sup>3</sup>/10s: (55.60...139.00)  
(40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1700  
Shutoff electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -  
3rd speed 1/min: 1630  
Shutoff electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...15.00  
1000S.: -  
4th speed 1/min: 1580  
Shutoff electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 15.00...45.00  
1000S.: -  
5th speed 1/min: 1550  
Shutoff electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 52.00...58.00  
1000S.: (50.50...59.50)  
9th speed 1/min: 1500  
Shutoff electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 69.50...72.50  
1000S.: (68.00...74.00)

12th speed 1/min: 1000  
Shutoff electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 63.50...64.50  
1000S.: (61.50...66.50)  
20th speed 1/min: 600  
Shutoff electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 45.50...49.50  
1000S.: (44.00...51.00)

Mech. shutoff:  
Mech. Abst. ellung:

1st speed 1/min: 1500  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -

Shutoff electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -

Shutoff electromagnet volt: -

Idle delivery:

1st speed 1/min: 350  
Shutoff electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 6.00...12.00  
1000S.: (4.00...14.00)

Dispersion cm<sup>3</sup>/: 3.0  
1000S.: (3.5)

2nd speed 1/min: 450  
Shutoff electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 370  
Shutoff electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 55.00...95.00  
1000S.: -

2nd speed 1/min: 500  
Shutoff electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 25.00...55.00  
1000S.: -

4th speed 1/min: 100  
Shutoff electromagnet Volt: 24



Del. quantity cm3/: 50.00...90.00

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.7...6.0
MS	mm: 1.2..1.45
SVS max.	mm: 2.5
XK	mm: 17.0...19.0
XL	mm: 13.3...16.7

Remarks:

: # MAN 7742  
:



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 5.6 P11  
 Edition : 09.12.91  
 replaces : -  
 Calibrating oil : ISO-4113  
 Injection pump : VE6/11F1500R55-10  
 Type number : 0 460 416 060  
 Customer Part-No. :

Customer-specific information  
 Customer : MAN

Engine : D 0226 MF

TEST BENCH REQUIREMENTS

Calibrating-oil  
 return temp. °C  
 with thermometer : 40.00...48.00  
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
 assembly : 1 688 901 000

Opening  
 Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
 x Wall thickness : 2.00  
 x Length mm: 840

Start of delivery  
 Prestroke mm: 0.6  
 (from BDC): ±0.02(0.04)

Injection-pump setting values  
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
 Setting value mm: 6.00...6.40

Supply-pump pressure

Speed 1/min: 1000  
 Setting value bar: 5.70...6.30

Full-load del. w/out charge press.:

Speed 1/min: 1000  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 63.5...64.50  
 Dispersion cm<sup>3</sup>/  
 1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 350  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 6.00...12.00  
 Del. quantity cm<sup>3</sup>/  
 1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1550  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 52.00...58.00

Start:

Speed 1/min: 100  
 Del. quantity cm<sup>3</sup>/  
 mind 1000S.: 50.00  
 1000S.: 50.00

Inspection-pump test specifications  
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1400  
 TD travel mm: 8.60...9.40  
 mm: (8.30...9.70)  
 3rd speed 1/min: 1000  
 TD travel mm: 6.00...6.40  
 mm: (5.50...6.90)  
 4th speed 1/min: 600  
 TD travel mm: 3.30...4.10  
 mm: (3.00...4.40)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
 Supply-pump  
 pressure bar: 4.20...4.80  
 bar: (3.90...5.10)  
 2nd speed 1/min: 1000  
 Supply-pump  
 pressure bar: 5.70...6.30  
 bar: (5.40...6.60)  
 3rd speed 1/min: 1500  
 Supply-pump  
 pressure bar: 7.50...8.10  
 bar: (7.20...8.40)

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.70...98.40)  
2nd speed 1/min: 1500  
Overflow : 55.60...139.00  
quantity cm<sup>3</sup>/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1700  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)  
3rd speed 1/min: 1650  
Del. quantity cm<sup>3</sup>/: 0.00...15.00  
1000S.: (0.00...15.00)  
4th speed 1/min: 1600  
Del. quantity cm<sup>3</sup>/: 15.00...45.00  
1000S.: (15.00...45.00)  
5th speed 1/min: 1550  
Del. quantity cm<sup>3</sup>/: 52.00...58.00  
1000S.: (50.50...59.50)  
9th speed 1/min: 1500  
Del. quantity cm<sup>3</sup>/: 69.50...72.50  
1000S.: (68.00...74.00)  
12th speed 1/min: 1000  
Del. quantity cm<sup>3</sup>/: 63.50...64.50  
1000S.: (61.50...66.50)  
20th speed 1/min: 600  
Del. quantity cm<sup>3</sup>/: 45.50...49.50  
1000S.: (44.00...51.00)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1500  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Electr. shutoff:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 24

Idle delivery:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/: 6.00...12.00  
1000S.: (4.00...14.00)  
Dispersion cm<sup>3</sup>/: 3.0  
1000S.: (3.5)  
2nd speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 370  
Del. quantity cm<sup>3</sup>/: 55.00...95.00  
1000S.: (55.00...95.00)

2nd speed 1/min: 500  
Del. quantity cm<sup>3</sup>/: 25.00...55.00  
1000S.: (25.00...55.00)

4th speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 50.00...90.00  
1000S.: (50.00...90.00)

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation  
K mm: -  
KF mm: 5.6...6.0  
MS mm: 1.1...1.5  
SVS max. mm: 2.6

Remarks:

:  
:  
Pushing electromagnet.

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 5.9 D  
Edition : 08.11.91  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/11F1150R394  
Type number : 0 460 416 067  
Customer Part-No. :

Customer-specific information  
Customer : IVECO-FIAT

Engine : 8065.25.220

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 020

Opening  
Pressure bar: 172.00...175.00

Perforated-plate  
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.3  
(from BDC): ±0.02(0.04)

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 700  
Charge press. hPa: 1000  
Setting value mm: 2.20...2.60  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 700  
Charge press hPa: 1000  
Setting value bar: 4.30...4.90  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 83.50...84.50  
Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/: 3.5  
1000S.: (4.0)

Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm<sup>3</sup>/  
1000S.: 74.00...75.00  
Shutoff  
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 325  
Del. quantity cm<sup>3</sup>/  
1000S.: 16.00...20.00  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 3.0  
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1260  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 47.00...53.00  
Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 85.00...135.00  
mind 1000S.: 85.00  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1000  
 Charge press hPa: 1000  
 TD travel mm: 3.10...3.90  
           mm: (2.80...4.20)  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 700  
 Charge press hPa: 1000  
 TD travel mm: 2.20...2.60  
           mm: (1.70...3.10)  
 Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 550  
 Charge press hPa: 1000  
 TD travel mm: 0.80...1.60  
           mm: (0.50...1.90)  
 Shutoff  
 electromagnet Volt: 12  
 Supply-pump pressure characteristic:  
 1st speed 1/min: 550  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 3.60...4.20  
                   bar: (3.30...4.50)  
 Shutoff  
 electromagnet Volt: 12  
 2nd speed 1/min: 700  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 4.30...4.90  
                   bar: (4.00...5.20)  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1150  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 6.10...6.70  
                   bar: (5.80...7.00)  
 Shutoff  
 electromagnet Volt: 12  
 Overflow quantity at overflow valve:  
 1st speed 1/min: 500  
 Shutoff  
 electromagnet Volt: 12  
 Overflow quantity cm3/10s: 41.70...83.40  
                                   (26.70...98.40)  
 2nd speed 1/min: 1150  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Overflow quantity cm3/10s: 55.60...139.00  
                                   (40.60...153.00)  
 Delivery-quant. and breakaway char.:

1st speed 1/min: 500  
 Charge-air pressure-setting point hPa: 350  
 LDA-stroke mm: 4.7  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 79.00...80.00  
                   1000S.: (75.50...83.50)  
 2nd speed 1/min: 1280  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 30.50...38.50  
                   1000S.: (29.50...39.50)  
 3rd speed 1/min: 1350  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 0.00...3.00  
                   1000S.: (0.00...3.00)  
 5th speed 1/min: 1260  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 47.00...53.00  
                   1000S.: (44.00...56.00)  
 9th speed 1/min: 1150  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 80.00...83.00  
                   1000S.: (78.00...85.00)  
 10th speed 1/min: 650  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 87.00...91.00  
                   1000S.: (85.50...92.50)  
 12th speed 1/min: 1000  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 83.50...84.50  
                   1000S.: (80.50...87.50)  
 18th speed 1/min: 500  
 Charge press. hPa: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 74.00...75.00  
                   1000S.: (71.00...78.00)  
 20th speed 1/min: 500  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 84.50...88.50  
                   1000S.: (83.00...90.00)  
 Mech. shutoff:  
 Mech. Abststellung:

1st speed 1/min: 1150  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 325  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 325  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 16.00...20.00  
1000S.: (14.00...22.00)

Dispersion cm<sup>3</sup>/: 3.0  
1000S.: (4.0)

2nd speed 1/min: 420  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 150  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 85.00...135.00  
1000S.: (85.00...135.00)

2nd speed 1/min: 250  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 60.00...80.00  
1000S.: (60.00...80.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 85.00...135.00  
1000S.: (85.00...135.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: -

KF mm: KOT  
MS mm: 1.0...1.4  
SVS max. mm: 4.7  
LDA stroke mm: 4.7  
XK mm: 23.0...25.0  
XL mm: 15.8...19.2

Remarks:

⋮  
\* Correction at adjusting nut (46)

Operate control lever after each  
manifold-pressure compensator pressure  
change.

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 7.2 T6  
Edition : 06.12.91  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/11F1350R417-2  
Type number : 0 460 416 070  
Customer Part-No. :

Customer-specific information  
Customer : MAN

Engine : D 0826 GF03

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 109

Opening  
Pressure bar: 207.00...210.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.55  
(from BDC): ±0.02(0.04)

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Setting value mm: 1.80...2.20  
Shutoff  
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000  
Setting value bar: 5.00...5.60  
Shutoff  
electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 78.00...79.00

Shutoff  
electromagnet Volt: 24  
Dispersion cm<sup>3</sup>/: 4.0  
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 300  
Del. quantity cm<sup>3</sup>/  
1000S.: 7.00...13.00

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 6.0  
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1410  
Del. quantity cm<sup>3</sup>/  
1000S.: 57.00...63.00

Shutoff  
electromagnet Volt: 24

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 35.00...85.00  
mind 1000S.: 35.00  
Shutoff  
electromagnet Volt: 24

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1350  
TD travel mm: 4.50...5.30  
mm: (4.50...5.30)

Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 1000  
TD travel mm: 1.80...2.20  
mm: (1.30...2.70)

Shutoff  
electromagnet Volt: 24  
4th speed 1/min: 900

TD travel mm: 0.70...1.50  
 mm: (0.40...1.80)  
 Shutoff  
 electromagnet Volt: 24  
 6th speed 1/min: 1100  
 TD travel mm: 2.50...3.30  
 mm: (2.20...3.60)  
 Shutoff  
 electromagnet Volt: 24  
 Supply-pump pressure characteristic:  
 1st speed 1/min: 600  
 Supply-pump pressure bar: 3.00...3.60  
 bar: (2.70...3.90)  
 Shutoff  
 electromagnet Volt: 24  
 2nd speed 1/min: 1000  
 Supply-pump pressure bar: 5.00...5.60  
 bar: (4.70...5.90)  
 Shutoff  
 electromagnet Volt: 24  
 3rd speed 1/min: 1350  
 Supply-pump pressure bar: 7.00...7.60  
 bar: (6.70...7.90)  
 Shutoff  
 electromagnet Volt: 24  
 Overflow quantity at overflow valve:  
 1st speed 1/min: 600  
 Shutoff  
 electromagnet Volt: 24  
 Overflow quantity cm<sup>3</sup>/10s: 41.70...83.40  
 2nd speed 1/min: 1350  
 Shutoff  
 electromagnet Volt: 24  
 Overflow quantity cm<sup>3</sup>/10s: 55.60...139.00  
 Delivery-quant. and breakaway char.:  
 2nd speed 1/min: 1550  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)  
 3rd speed 1/min: 1500  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 0.00...15.00  
 1000S.: (0.00...15.00)  
 4th speed 1/min: 1450  
 Del. quantity cm<sup>3</sup>/: 15.00...45.00  
 1000S.: (15.00...45.00)

5th speed 1/min: 1410  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 57.00...63.00  
 1000S.: (55.50...64.50)  
 9th speed 1/min: 1350  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 77.00...80.00  
 1000S.: (75.50...81.50)  
 11th speed 1/min: 300  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 75.00...79.00  
 1000S.: (73.50...80.50)  
 12th speed 1/min: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 78.00...79.00  
 1000S.: (76.00...81.00)  
 20th speed 1/min: 600  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 58.00...64.00  
 1000S.: (57.00...65.00)  
 Mech. shutoff:  
 Mech. Abstellung:  
 1st speed 1/min: 1350  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet volt: 24  
 Electr. shutoff:  
 1st speed 1/min: 300  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet volt: -  
 Idle delivery:  
 1st speed 1/min: 300  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 7.00...13.00  
 1000S.: (5.00...15.00)  
 Dispersion cm<sup>3</sup>/: 6.0  
 1000S.: (6.5)  
 2nd speed 1/min: 450  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)  
 Automatic starting fuel delivery:



1st speed 1/min: 350  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...120.00  
1000S.: (60.00...120.00)

2nd speed 1/min: 500  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 40.00...70.00  
1000S.: (40.00...70.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 35.00...85.00  
1000S.: (35.00...85.00)

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.6...6.0
MS	mm: 1.3
SVS max.	mm: 3.4

Remarks:

:  
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 3.6 M
Edition : 09.12.91
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/12F1350R392
Type number : 0 460 424 070
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8040.45.281

Power KW: 88.4

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): +-0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 2.20...2.60

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1150
Charge press hPa: 1000
Setting value bar: 6.30...7.30
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1200
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 119.50...120.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 5.0
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 76.50...77.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 370
Del. quantity cm3/
1000S.: 18.00...22.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.5
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1500
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 61.00...67.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 90.00...140.00
mind 1000S.: 90.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1100  
 Charge press hPa: 1000  
 Inj.-qty. cm3/  
 difference 1000S.: 8.00...16.00  
 Shutoff  
 electromagnet Volt: 12  
 TD-travel dif.measurement  
 correttore anticipo iniezione (SV)  
 1.Speed 1/min: 1100  
 Charge press hPa: 1000  
 TD-travel  
 difference mm: 1.40...1.60  
 Shutoff  
 electromagnet Volt: 12

Inspection-pump test specifications  
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1350  
 Charge press hPa: 1000  
 TD travel mm: 3.70...4.50  
 mm: (3.40...4.80)

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1100  
 Charge press hPa: 1000  
 TD travel mm: 2.20...2.60  
 mm: (1.70...3.10)

Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 900  
 Charge press hPa: 1000  
 TD travel mm: 0.60...1.40  
 mm: (0.30...1.70)

Shutoff  
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500  
 Charge press. hPa: 1000  
 Supply-pump  
 pressure bar: 4.20...4.80  
 bar: (3.80...5.20)

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1100  
 Charge press. hPa: 1000  
 Supply-pump  
 pressure bar: 6.70...7.30  
 bar: (6.30...7.70)

Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 1350  
 Charge press. hPa: 1000  
 Supply-pump  
 pressure bar: 7.50...8.10  
 bar: (7.10...8.50)

Shutoff  
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
 Charge press. hPa: -  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 41.70...83.40  
 quantity cm3/10s: (26.70...98.40)  
 2nd speed 1/min: 1350  
 Charge press. hPa: 1000

Shutoff  
 electromagnet Volt: 12  
 Overflow : 55.60...139.00  
 quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 500\*  
 Charge-air pressure-setting  
 point hPa: 500  
 ADA-stroke mm: 6.3  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 101.50...102.50  
 1000S.: (98.50...105.50)

3rd speed 1/min: 1600  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 0.00...3.00  
 1000S.: (0.00...3.00)

5th speed 1/min: 1500  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 61.00...67.00  
 1000S.: (58.00...70.00)

9th speed 1/min: 1350  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 116.50...120.50  
 1000S.: (115.00...122.00)

10th speed 1/min: 500  
 12th speed 1/min: 1200  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quynntity cm3/: 119.50...120.50  
 1000S.: (117.00...123.00)

18th speed 1/min: 500  
 Charge press. hPa: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 76.50...77.50  
 1000S.: (74.00...80.00)

20th speed 1/min: 800  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 115.00...119.00  
1000S.: (113.50...120.50)

Mech. shutoff:  
Mech. Abst.ellung:

1st speed 1/min: 1350  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 370  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 370  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 18.00...22.00  
1000S.: (15.00...25.00)

Dispersion cm<sup>3</sup>/: 3.5  
1000S.: (4.0)

2nd speed 1/min: 450  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...5.00  
1000S.: (0.00...5.00)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1100  
Charge press. hPa: 1000  
Inj.-qty. cm<sup>3</sup>/ : 8.00...16.00  
difference 1000S.: (8.00...16.00)

2nd speed 1/min: 1100  
Charge press. hPa: 1000  
TD-travel : 1.40...1.60  
difference mm: (1.40...1.60)  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 150  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 100.00...150.00  
1000S.: (100.00...150.00)

2nd speed 1/min: 250  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 26.00...50.00  
1000S.: (26.00...50.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 90.00...140.00  
1000S.: (90.00...140.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: -  
KF mm: 5.1...5.5  
MS mm: 0.8...1.2  
LDA stroke mm: 6.3

Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each  
manifold-pressure compensator pressure  
change.

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 3,6 N  
Edition : 15.07.91  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/12F1350R407  
Type number : 0 460 424 075  
Customer Part-No. :

Customer-specific information  
Customer : IVECO-FIAT

Engine : 8040.25.4000 TC

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Charge press. hPa: 1000  
Setting value mm: 1.40...1.80

Shutoff  
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000  
Charge press hPa: 1000  
Setting value bar: 5.70...6.30  
Shutoff  
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 78.50...79.50

Shutoff  
electromagnet Volt: 24  
Dispersion cm<sup>3</sup>/: 3.5  
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 600  
Del. quantity cm<sup>3</sup>/  
1000S.: 50.50...51.50

Shutoff  
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 250  
Del. quantity cm<sup>3</sup>/  
1000S.: 13.00...17.00

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 3.5  
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1525  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 30.00...36.00

Shutoff  
electromagnet Volt: 24

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
mind 1000S.: 60.00

Shutoff  
electromagnet Volt: 24

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100  
Charge press hPa: 1000  
TD travel mm: 2.20...3.00  
mm: (1.70...3.50)

Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 1.40...1.80  
mm: (0.70...2.50)

5th speed 1/min: 1350  
Charge press. hPa: 1000  
TD travel mm: 3.70...4.50  
mm: (3.20...5.00)

Shutoff  
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Charge press. hPa: 1000  
Supply-pump pressure bar: 3.70...4.30  
Shutoff

electromagnet Volt: 24  
2nd speed 1/min: 1000  
Charge press. hPa: 1000  
Supply-pump pressure bar: 5.70...6.30  
Shutoff

electromagnet Volt: 24  
3rd speed 1/min: 1350  
Charge press. hPa: 1000  
Supply-pump pressure bar: 7.50...8.10  
Shutoff

electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Overflow quantity cm3/10s: 41.70...83.40  
(26.70...98.40)

2nd speed 1/min: 1350  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Overflow quantity cm3/10s: 55.60...139.00  
(40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 600\*

Charge-air pressure-setting  
point hPa: 375  
LDA-stroke mm: 6,7

Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/1000S.: 69.00...70.00  
(65.50...73.50)

2nd speed 1/min: 1600  
Charge press. hPa: 1000  
Shutoff

electromagnet Volt: 24  
Del. quantity cm3/1000S.: 0.00...3.00  
(0.00...3.00)

5th speed 1/min: 1525  
Charge press. hPa: 1000  
Shutoff

electromagnet Volt: 24  
Del. quantity cm3/1000S.: 30.00...36.00  
(27.00...39.00)

8th speed 1/min: 1475  
Charge press. hPa: 1000  
Shutoff

electromagnet Volt: 24  
Del. quantity cm3/1000S.: 43.00...51.00  
(41.00...53.00)

9th speed 1/min: 1350  
Charge press. hPa: 1000  
Shutoff

electromagnet Volt: 24  
Del. quantity cm3/1000S.: 68.50...71.50  
(66.50...73.50)

10th speed 1/min: 1200  
Charge press. hPa: 1000  
Shutoff

electromagnet Volt: 24  
Del. quantity cm3/1000S.: 71.00...75.00  
(69.50...76.50)

12th speed 1/min: 700  
Charge press. hPa: 1000  
Shutoff

electromagnet Volt: 24  
Del. quantity cm3/1000S.: 79.00...80.00  
(76.00...83.00)

18th speed 1/min: 600  
Charge press. hPa: -  
Shutoff

electromagnet Volt: 24  
Del. quantity cm3/1000S.: 51.50...52.50  
(48.50...55.50)

20th speed 1/min: 600  
Charge press. hPa: 1000  
Shutoff

electromagnet Volt: 24  
Del. quantity cm3/1000S.: 82.50...86.50  
(81.00...88.00)

21th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 50.00...54.00  
1000S.: (48.00...56.00)

Mech. shutoff:  
Mech. Abst $\ddot{u}$ llung:

1st speed 1/min: 1350  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 250  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 250  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 13.00...17.00  
1000S.: (10.00...20.00)

Dispersion cm<sup>3</sup>/: 3.5  
1000S.: (5.0)

2nd speed 1/min: 375  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
1000S.: (60.00...110.00)

2nd speed 1/min: 230  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 45.00...65.00  
1000S.: (45.00...65.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
1000S.: (60.00...110.00)

Shutoff electromagnet:

Cut-in  
min voltage : 20.0

Rated voltage : 24.0

Mounting and assembly dimensions:

Designation  
K mm: 3,7  
KF mm: K-OT  
MS mm: 0,7...1,1  
LDA stroke mm: 6,7

Operate control lever after each  
manifold-pressure compensator pressure  
change. :

\* Correction at adjusting nut (46)

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 3,6 N1  
Edition : 03.12.91  
replaces : 15.07.91  
Calibrating oil : ISO-4113  
Injection pump : VE4/12F1350R407-1  
Type number : 0 460 424 076  
Customer Part-No. :

Customer-specific information  
Customer : IVECO-FIAT

Engine : 8040.45.4000 TCA

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Charge press. hPa: 1000  
Setting value mm: 1.90...2.30

Shutoff  
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000  
Charge press hPa: 1000  
Setting value bar: 5.80...6.40  
Shutoff  
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 72.00...73.00

Shutoff  
electromagnet Volt: 24  
Dispersion cm<sup>3</sup>/: 3.5  
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 600  
Del. quantity cm<sup>3</sup>/  
1000S.: 42.50...43.50

Shutoff  
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 350  
Del. quantity cm<sup>3</sup>/  
1000S.: 13.00...17.00

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 3.5  
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1525  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 23.00...29.00

Shutoff  
electromagnet Volt: 24

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
mind 1000S.: 60.00  
Shutoff  
electromagnet Volt: 24

Inspection-pump test specifications  
Test specifications in parentheses



Timing-device characteristic:

2nd speed 1/min: 1100  
Charge press hPa: 1000  
TD travel mm: 2.20...3.00  
mm: (1.70...3.50)

Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 1.40...1.80  
mm: (0.70...2.50)

Shutoff  
electromagnet Volt: 24  
5th speed 1/min: 1350  
Charge press. hPa: 1000  
TD travel mm: 3.70...4.50  
mm: (3.20...5.00)

Shutoff  
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 4.10...4.70  
Shutoff

electromagnet Volt: 24  
2nd speed 1/min: 1000  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 5.80...6.40  
Shutoff

electromagnet Volt: 24  
3rd speed 1/min: 1350  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 7.20...7.80  
Shutoff  
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Overflow quantity cm<sup>3</sup>/10s: (89,25...160.95)  
: 104,25...145.95

2nd speed 1/min: 1350  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Overflow quantity cm<sup>3</sup>/10s: (96,20...209.60)  
: 111,20...194.60

Delivery-quant. and breakaway char.:

1st speed 1/min: 600\*  
Charge-air pressure-setting  
point hPa: 510  
LDA-stroke mm: 6,5  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 62.00...63.00  
1000S.: (58.50...66.50)

2nd speed 1/min: 1600  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

5th speed 1/min: 1525  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 30.00...36.00  
1000S.: (27.00...39.00)

8th speed 1/min: 1450  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 49.00...57.00  
1000S.: (47.00...59.00)

9th speed 1/min: 1350  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 63.00...66.00  
1000S.: (61.00...68.00)

10th speed 1/min: 1200  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 64.50...68.50  
1000S.: (63.00...70.00)

12th speed 1/min: 700  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 72.00...73.00  
1000S.: (69.00...76.00)

18th speed 1/min: 600  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 42.50...43.50  
1000S.: (39.50...46.50)

20th speed 1/min: 600  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 74.50...78.50  
1000S.: (73.00...80.00)

21th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 41.00...45.00  
1000S.: (39.00...47.00)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1350  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 13.00...17.00  
1000S.: (10.00...20.00)

Dispersion cm<sup>3</sup>/: 3.5  
1000S.: (5.0)

2nd speed 1/min: 475  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
1000S.: (60.00...110.00)

2nd speed 1/min: 230  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 30.00...50.00  
1000S.: (45.00...65.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
1000S.: (60.00...110.00)

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation  
K mm: 3,7  
KF mm: K-OT  
MS mm: 0,7...1,1  
LDA stroke mm: 6,9

Remarks:

:  
Operate control lever after each  
manifold-pressure compensator pressure  
change.

\* Correction at adjusting nut (46)

Overflow restriction 0.75 mm - Part No.  
..343,..344

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 3,6 N2  
Edition : 04.12.91  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/12F1350R407-2  
Type number : 0 460 424 077  
Customer Part-No. :

Customer-specific information  
Customer : IVECO-FIAT

Engine : 8040.25.4200 LTC

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Charge press. hPa: 1000  
Setting value mm: 2.20...2.60

Shutoff  
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000  
Charge press hPa: 1000  
Setting value bar: 5.70...6.30  
Shutoff  
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 67.50...68.50

Shutoff  
electromagnet Volt: 24  
Dispersion cm<sup>3</sup>/: 3.5  
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 600  
Del. quantity cm<sup>3</sup>/  
1000S.: 50.00...51.00

Shutoff  
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 350  
Del. quantity cm<sup>3</sup>/  
1000S.: 13.00...17.00

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 3.5  
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1525  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 17.00...23.00

Shutoff  
electromagnet Volt: 24

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
mind 1000S.: 60.00

Shutoff  
electromagnet Volt: 24

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100  
Charge press hPa: 1000  
TD travel mm: 2.90...3.70  
mm: (2.40...4.20)

Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 2.20...2.60  
mm: (1.50...3.30)

Shutoff  
electromagnet Volt: 24  
5th speed 1/min: 1350  
Charge press. hPa: 1000  
TD travel mm: 3.70...4.50  
mm: (3.20...5.00)

Shutoff  
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 3.70...4.30  
bar: (3.40...4.60)

Shutoff  
electromagnet Volt: 24  
2nd speed 1/min: 1000  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 5.70...6.30  
bar: (5.40...6.60)

Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 1350  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 7.50...8.10  
bar: (7.20...8.40)

Shutoff  
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Overflow : 41.00...83.00  
quantity cm3/10s: (26.00...98.00)

2nd speed 1/min: 1350  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Overflow : 55.00...138.00  
quantity cm3/10s: (40.00...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 600\*  
Charge-air pressure-setting  
point hPa: 510  
LDA-stroke mm: 6.0  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/: 64.50...65.50  
1000S.: (61.00...69.00)

2nd speed 1/min: 1600  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/: 0.00...3.00  
1000S.: (0.00...3.00)

5th speed 1/min: 1525  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/: 17.00...23.00  
1000S.: (14.00...26.00)

8th speed 1/min: 1475  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/: 33.00...41.00  
1000S.: (31.00...43.00)

9th speed 1/min: 1350  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/: 59.00...63.00  
1000S.: (57.00...64.00)

10th speed 1/min: 1200  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/: 62.50...66.50  
1000S.: (61.00...68.00)

12th speed 1/min: 700  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/: 67.50...68.50  
1000S.: (64.50...71.50)

18th speed 1/min: 600  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/: 50.00...51.00  
1000S.: (47.00...54.00)

20th speed 1/min: 600  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/: 67.50...71.50  
1000S.: (66.00...73.00)

21th speed 1/min: 500

Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 48.50...52.50  
1000S.: (46.50...54.50)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1350  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 13.00...17.00  
1000S.: (10.00...20.00)

Dispersion cm<sup>3</sup>/: 3.5  
1000S.: (5.0)

2nd speed 1/min: 475  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
1000S.: (60.00...110.00)

2nd speed 1/min: 250  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 30.00...50.00  
1000S.: (45.00...65.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
1000S.: (60.00...110.00)

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation  
K mm: 3.9...4.1  
KF mm: K-OT  
LDA stroke mm: 6.0

Remarks:

:  
Operate control lever after each  
manifold-pressure compensator pressure  
change.

\* Correction at adjusting nut (46)

Overflow restriction 0.55 mm - Part No.  
..303

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAX.  
Edition : 10.10.91  
replaces : -  
Calibrating oil : ISO 4113  
Injection pump : VE4/12F1400R454  
Type number : 0 460 424 082  
Customer Part-No. :

Customer-specific information  
Customer : MAXON

Engine : S4

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6  
x Wall thickness : 2  
x Length mm: 450

Start of delivery  
Prestroke mm: 0.3  
(from BDC):  $\pm 0,02(0.04)$

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel

Speed 1/min: 1000  
Setting value mm: 2.3...2.7  
Shutoff  
electromagnet Volt: 12

## Supply-pump pressure

Speed 1/min: 1000

C08

Setting value bar: 5.0...5.6  
Shutoff  
electromagnet Volt: 12

## Full-load del. with charge press.:

Speed 1/min: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 90.5...91.5

Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/  
1000S.: (4.5)

## Low-idle speed regulation

Speed 1/min: 350  
Del. quantity cm<sup>3</sup>/  
1000S.: 28.0...32.0

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/  
1000S.: (5.0)

## Full-load speed regulation

Speed 1/min: 1450  
Del. quantity cm<sup>3</sup>/  
1000S.: 69.0...75.0

Shutoff  
electromagnet Volt: 12

## Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/  
mind 1000S.: 90.0  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

## Timing-device characteristic:

1st speed 1/min: 800  
TD travel mm: 0.5...1.3  
mm: (0.3...1.5)  
electromagnet Volt: 12  
2nd speed 1/min: 1000  
TD travel mm: 2.3...2.7  
mm: (2.0...3.0)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1350  
TD travel mm: 3.8...4.6  
mm: (3.6...4.8)

## Supply-pump pressure characteristic:

1st speed 1/min: 800  
Supply-pump pressure bar: 4.1...4.7  
Shutoff electromagnet Volt: 12  
2nd speed 1/min: 1000  
Supply-pump pressure bar: 5.0...5.6  
Shutoff electromagnet Volt: 12  
3rd speed 1/min: 1350  
Supply-pump pressure bar: 6.5...7.1  
Shutoff electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Shutoff electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: (41...83)  
2nd speed 1/min: 1350  
Shutoff electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: (55...138)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1550  
Shutoff electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: (17.0...27.0)  
2nd speed 1/min: 1450  
Shutoff electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: (69.0...75.0)  
3rd speed 1/min: 1350  
Shutoff electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: (85.5...89.5)  
4th speed 1/min: 1000  
Shutoff electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: (90.5...91.5)  
5th speed 1/min: 500  
Shutoff electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: (59.0...65.0)

Mech. shutoff:  
Mech. Abst.:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/1000S.: (0.0...3.0)

Shutoff electromagnet volt: -

Idle delivery:

1st speed 1/min: 350  
Shutoff electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: (28.0...32.0)

2nd speed 1/min: 400  
Shutoff electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: (8.0...16.0)

3rd speed 1/min: 450  
Shutoff electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: (0.0...6.0)

Automatic starting fuel delivery:

1st speed 1/min: 175  
Shutoff electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: (50.0...110.0)

2nd speed 1/min: 250  
Shutoff electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: (40.0...80.0)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: -  
KF mm: 5,2...5,6  
MS mm: 0.7...1.1

Remarks:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAX  
Edition : 10.10.91  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE4/12F1400R455  
Type number : 0 460 424 083  
Customer Part-No. :

Customer-specific information  
Customer : MAXON

Engine : S4T

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
Pressure bar: 130.0...133.0

Test inj. tubing : 1 680 750 073

Outside diameter : 6  
x Wall thickness : 2  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Charge press. hPa: 800  
Setting value mm: 2.2...2.6  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000  
Charge press hPa: 800  
Setting value bar: 5.9...6.5  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1000  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000S.: 136.0...137.0

Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/: 4.0  
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm<sup>3</sup>/  
1000S.: 85.0...89.0

Shutoff  
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 350  
Del. quantity cm<sup>3</sup>/  
1000S.: 22.0...26.0

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 3.5  
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1475  
Charge press hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000S.: 1066.0...112.0

Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Charge press hPa: -  
Del. quantity cm<sup>3</sup>/: -  
mind 1000S.: 125.0

Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800  
Charge press hPa: 800



TD travel mm: 0.9...1.7  
mm: (0.7...1.9)  
electromagnet Volt: 12  
2nd speed 1/min: 1000  
Charge press hPa: 800  
TD travel mm: 2.2...2.6  
mm: (1.9...2.9)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
Charge press hPa: 800  
TD travel mm: 2.8...3.6  
mm: (2.6...3.8)

Supply-pump pressure characteristic:

1st speed 1/min: 800  
Charge press. hPa: 800  
Supply-pump pressure bar: 5.0...5.6  
Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1000  
Charge press. hPa: 800  
Supply-pump pressure bar: 5.9...6.5  
Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
Charge press. hPa: 800  
Supply-pump pressure bar: 6.9...7.5  
Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 41...83  
(26...98)  
2nd speed 1/min: 1250  
Charge press. hPa: 800  
Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 55...138  
(40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750  
Charge-air pressure-setting point hPa: 400  
LDA-stroke mm: -  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/1000s.: 119.0...123.0  
(118.0...124.0)

2nd speed 1/min: 1570  
Charge press. hPa: 800  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 35.0...45.0  
(42.5...47.5)

3rd speed 1/min: 1475  
Charge press. hPa: 800  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 106.0...112.0  
(104.0...114.0)

4th speed 1/min: 1250  
Charge press. hPa: 800  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 135.0...139.0  
(134.0...140.0)

5th speed 1/min: 1000  
Charge press. hPa: 800  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 136.0...137.0  
(135.0...138.0)

6th speed 1/min: 800  
Charge press. hPa: 800  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 136.0...142.0  
(135.0...143.0)

7th speed 1/min: 750  
Charge press. hPa: 400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 119.0...123.0  
(118.0...124.0)

8th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 85.0...89.0  
(84.0...90.0)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 350  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/1000s.: 0.0...3.0  
1000s.: -

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 22.0...26.0  
1000S.: (21.0...27.0)  
2nd speed 1/min: 375  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 10.0...18.0  
1000S.: (9.0...19.0)  
3rd speed 1/min: 425  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.0...6.0  
1000S.: -

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.6...3.8  
KF mm: KOT  
MS mm: 0.6...1.0

Remarks:



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 5.5 R1  
Edition : 02.12.91  
replaces : 03.05.90  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/12F1350R329-1  
Type number : 0 460 426 120  
Customer Part-No. :

Customer-specific information  
Customer : IVECO-FIAT

Engine : 8060.25.241

Power KW: 100

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 020

Opening  
Pressure bar: 172.00...175.00

Perforated-plate  
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.2  
(from BDC):  $\pm 0.02(0.04)$

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200  
Charge press. hPa: 1000  
Setting value mm: 3.00...3.40

Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1200  
Charge press hPa: 1000  
Setting value bar: 7.70...8.30  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1200  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 96.00...97.00

Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/  
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm<sup>3</sup>/  
1000S.: 66.50...67.50

Shutoff  
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 350  
Del. quantity cm<sup>3</sup>/  
1000S.: 13.00...17.00

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/  
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1500  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 37.00...43.00

Shutoff  
electromagnet Volt: 12.0

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/  
mind 1000S.: 75.00

Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1200  
 Charge press hPa: 1000  
 Inj.-qty. cm<sup>3</sup>/  
 difference 1000S.: 12.00...20.00  
 Shutoff  
 electromagnet Volt: 12.0  
 TD-travel dif.measurement  
 correttore anticipo iniezione (SV)  
 1.Speed 1/min: 1200  
 Charge press hPa: 1000  
 TD-travel  
 difference mm: 1.40...1.60  
 Shutoff  
 electromagnet Volt: 12.0  
 SP press.-dif.measurement  
 pompa di mandata (FP)  
 1.Speed 1/min: 1200  
 Charge press hPa: 1000  
 Supply pump  
 pressure  
 difference bar: 0.00...0.40  
 Shutoff  
 electromagnet Volt: 12.0

Inspection-pump test specifications  
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1350  
 Charge press hPa: 1000  
 TD travel mm: 3.60...4.40  
 mm: (3.30...4.70)

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1200  
 Charge press hPa: 1000  
 TD travel mm: 3.00...3.40  
 mm: (2.50...3.90)

Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 900  
 Charge press hPa: 1000  
 TD travel mm: 0.70...1.50  
 mm: (0.40...1.80)

Shutoff  
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500  
 Charge press. hPa: 1000  
 Supply-pump  
 pressure bar: 5.00...5.60  
 bar: (4.60...6.00)

Shutoff  
 electromagnet Volt: 12  
 2nd speed 1/min: 900  
 Charge press. hPa: 1000

Supply-pump  
 pressure bar: 6.60...7.20  
 bar: (6.20...7.60)

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1200  
 Charge press. hPa: 1000

Supply-pump  
 pressure bar: 7.70...8.30  
 bar: (7.30...8.70)

Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 1350  
 Charge press. hPa: 1000  
 Supply-pump  
 pressure bar: 8.30...8.90  
 bar: (7.90...9.30)

Shutoff  
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 41.70...83.40  
 quantity cm<sup>3</sup>/10s: (26.70...98.40)  
 2nd speed 1/min: 1350  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 55.60...139.00  
 quantity cm<sup>3</sup>/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 500\*  
 Charge-air pressure-setting  
 point hPa: 500  
 LDA-stroke mm: 3.0  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 81.00...82.00  
 1000S.: (78.00...85.00)

3rd speed 1/min: 1600  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)

5th speed 1/min: 1500  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 37.00...43.00  
 1000S.: (34.00...46.00)

9th speed 1/min: 1350  
 Charge press. hPa: 1000

Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 92.50...95.50  
                   1000S.: (91.00...97.00)  
 12th speed 1/min: 1200  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 96.00...97.00  
                   1000S.: (93.50...99.50)  
 18th speed 1/min: 500  
 Charge press. hPa: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 66.50...67.50  
                   1000S.: (64.00...70.00)  
 20th speed 1/min: 800  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 90.50...93.50  
                   1000S.: (89.00...95.00)

Mech. shutoff:  
 Mech. Abststellung:

1st speed 1/min: 1350  
 Charge press. hPa: 1000  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
                   1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400  
 Charge press. hPa: -  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
                   1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 350  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 13.00...17.00  
                   1000S.: (10.00...20.00)  
 Dispersion cm<sup>3</sup>/: 3.5  
                   1000S.: (4.0)  
 2nd speed 1/min: 450  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 0.00...5.00  
                   1000S.: (0.00...5.00)

Load-dependent start of delivery:  
 Inj.-qty.dif.measurement:

1st speed 1/min: 1200  
 Charge press. hPa: 1000  
 Inj.-qty. cm<sup>3</sup>/: 12.00...20.00  
 difference 1000S.: (12.00...20.00)  
 Shutoff  
 electromagnet Volt: 12.0  
 2nd speed 1/min: 1200  
 Charge press. hPa: 1000  
 TD-travel : 1.40...1.60  
 difference mm: (1.40...1.60)  
 Shutoff  
 electromagnet Volt: 12

SP press.-dif.measurement:  
 pompa di mandata (FP):  
 1st speed 1/min: 1200  
 2nd speed 1/min: 1200  
 Charge press. hPa: 1000  
 Supply pump-  
 pressure : 0.00...0.40  
 difference bar: (0.20...0.20)  
 Shutoff  
 electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 150  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 85.00...125.00  
                   1000S.: (85.00...125.00)

2nd speed 1/min: 250  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 36.00...60.00  
                   1000S.: (36.00...60.00)

4th speed 1/min: 100  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 75.00...115.00  
                   1000S.: (75.00...115.00)

Shutoff electromagnet:

Cut-in  
 min voltage : 10.0  
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
 K mm: -  
 KF mm: 5.0...5.4  
 MS mm: -  
 SVS max. mm: -  
 LDA stroke mm: 3.0

Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 5.9 D1  
Edition : 04.12.91  
replaces : 11.11.91  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/12F1350R404  
Type number : 0 460 426 169  
Customer Part-No. :

Customer specific information  
Customer : IVECO-FIAT

Engine : 8060.25.4200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery

Indicator setting  
Piston stroke mm: 1.0  
Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Charge press. hPa: 1000  
Setting value mm: 1.30...1.70

Shutoff  
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000  
Charge press hPa: 1000  
Setting value bar: 5.90...6.50  
Shutoff  
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 61.50...62.50

Shutoff  
electromagnet Volt: 24  
Dispersion cm<sup>3</sup>/: 3.5  
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 600  
Del. quantity cm<sup>3</sup>/  
1000S.: 49.00...50.00

Shutoff  
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 350  
Del. quantity cm<sup>3</sup>/  
1000S.: 13.00...17.00

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 4.0  
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1475  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 38.00...46.00

Shutoff  
electromagnet Volt: 24

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
mind 1000S.: 60.00

Shutoff  
electromagnet Volt: 24

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1000  
 Charge press hPa: 1000  
 TD travel mm: 1.30...1.70  
 mm: (0.60...2.40)

Shutoff  
 electromagnet Volt: 24  
 3rd speed 1/min: 1100  
 Charge press hPa: 1000  
 TD travel mm: 2.20...3.00  
 mm: (1.70...3.50)

Shutoff  
 electromagnet Volt: 24  
 4th speed 1/min: 1350  
 Charge press hPa: 1000  
 TD travel mm: 3.70...4.50  
 mm: (3.20...5.00)

Shutoff  
 electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 1000  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 5.90...6.50  
 bar: (5.60...6.80)

Shutoff  
 electromagnet Volt: 24  
 2nd speed 1/min: 600  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 4.00...4.60  
 bar: (3.70...4.90)

Shutoff  
 electromagnet Volt: 24  
 3rd speed 1/min: 1350  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 7.50...8.10  
 bar: (7.20...8.40)

Shutoff  
 electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Overflow quantity cm<sup>3</sup>/10s: 41.70...83.40  
 (26.70...98.40)

2nd speed 1/min: 1150  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Overflow quantity cm<sup>3</sup>/10s: 55.60...139.00  
 (40.60...153.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 600\*  
 Charge-air pressure-setting point hPa: 225  
 LDA-stroke mm: 5.7

Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/1000s.: 57.50...58.50  
 (54.00...62.00)

2nd speed 1/min: 1475  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/1000s.: 38.00...46.00  
 (34.00...48.00)

3rd speed 1/min: 1600  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/1000s.: 0.00...3.00  
 (0.00...3.00)

5th speed 1/min: 1525  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/1000s.: 22.00...28.00  
 (19.00...31.00)

9th speed 1/min: 1350  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/1000s.: 53.50...56.50  
 (51.50...58.50)

10th speed 1/min: 1200  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/1000s.: 56.00...60.00  
 (54.50...61.50)

12th speed 1/min: 700  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/1000s.: 61.50...62.50  
 (58.50...65.50)

18th speed 1/min: 600  
 Charge press. hPa: -  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/1000s.: 49.00...50.00  
 (46.00...53.00)

20th speed 1/min: 600  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/1000s.: 62.00...66.00  
 (60.50...67.50)



Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1350  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 13.00...17.00  
1000S.: (10.00...20.00)

Dispersion cm<sup>3</sup>/: 2.0  
1000S.: (5.0)

2nd speed 1/min: 475

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
1000S.: (60.00...110.00)

2nd speed 1/min: 250  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...80.00  
1000S.: (60.00...80.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
1000S.: (60.00...110.00)

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: 3.7
KF	mm: KOT
MS	mm: 0.7...1.1
LDA stroke	mm: 5.7
XK	mm: 20.0...22.0
XL	mm: 9.8...13.2

Remarks:

:  
:  
\* Correction at adjusting nut (46)

Operate control lever after each  
manifold-pressure compensator pressure  
change.

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 5.9 D2  
Edition : 05.12.91  
replaces : 11.11.91  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/12F1350R404-1  
Type number : 0 460 426 170  
Customer Part-No. :

Customer-specific information  
Customer : IVECO-FIAT

Engine : 8060.45.4100

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery

Indicator setting  
Piston stroke mm: 1.0  
Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Charge press. hPa: 1000

Setting value mm: 1.30...1.70  
Shutoff  
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000  
Charge press hPa: 1000  
Setting value bar: 5.90...6.50  
Shutoff  
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700  
Charge press. hPa: 1000  
Del. quantity cm3/  
1000S.: 72.50...73.50

Shutoff  
electromagnet Volt: 24  
Dispersion cm3/  
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 600  
Del. quantity cm3/  
1000S.: 41.50...42.50

Shutoff  
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 350  
Del. quantity cm3/  
1000S.: 13.00...17.00

Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/  
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1475  
Charge press hPa: 1000  
Del. quantity cm3/  
1000S.: 38.00...46.00

Shutoff  
electromagnet Volt: 24

Start:

Speed 1/min: 100  
Del. quantity cm3/: 60.00...110.00  
mind 1000S.: 60.00

Shutoff  
electromagnet Volt: 24

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 1.30...1.70  
mm: (0.60...2.40)

Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 1100  
Charge press hPa: 1000  
TD travel mm: 2.20...3.00  
mm: (1.70...3.50)

Shutoff  
electromagnet Volt: 24  
4th speed 1/min: 1350  
Charge press hPa: 1000  
TD travel mm: 3.70...4.50  
mm: (3.20...5.00)

Shutoff  
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 1000  
Charge press. hPa: 1000  
Supply-pump pressure bar: 5.90...6.50  
bar: (5.60...6.80)

Shutoff  
electromagnet Volt: 24  
2nd speed 1/min: 600  
Charge press. hPa: 1000  
Supply-pump pressure bar: 4.00...4.60  
bar: (3.70...4.90)

Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 1350  
Charge press. hPa: 1000  
Supply-pump pressure bar: 7.40...8.00  
bar: (7.10...8.30)

Shutoff  
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Overflow quantity cm3/10s: 41.70...83.40  
(26.70...98.40)  
2nd speed 1/min: 1150  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Overflow quantity cm3/10s: 55.60...139.00  
(40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 600\*  
Charge-air pressure-setting point hPa: 400  
LDA-stroke mm: 7.2  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/1000s.: 61.00...62.00  
(57.50...65.50)

2nd speed 1/min: 1475  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/1000s.: 38.00...46.00  
(34.00...48.00)

3rd speed 1/min: 1600  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/1000s.: 0.00...3.00  
(0.00...3.00)

5th speed 1/min: 1525  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/1000s.: 22.00...28.00  
(19.00...31.00)

9th speed 1/min: 1350  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/1000s.: 61.50...64.50  
(59.50...66.50)

10th speed 1/min: 1200  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/1000s.: 53.50...57.50  
(62.00...69.00)

12th speed 1/min: 700  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/1000s.: 72.50...73.50  
(69.50...76.50)

18th speed 1/min: 600  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/1000s.: 41.50...42.50  
(38.50...45.50)

20th speed 1/min: 600  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/1000s.: 75.00...79.00  
(73.50...80.50)

Mech. shutoff:  
Mech. Abst.ellung:

1st speed 1/min: 1350  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 13.00...17.00  
1000S.: (10.00...20.00)

Dispersion cm<sup>3</sup>/: 2.0  
1000S.: (5.0)

2nd speed 1/min: 475

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
1000S.: (60.00...110.00)

2nd speed 1/min: 250  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...80.00  
1000S.: (60.00...80.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
1000S.: (60.00...110.00)

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation  
K mm: 3.7  
KF mm: KOT  
MS mm: 0.7...1.1  
LDA stroke mm: 7.2

Remarks:

:  
\* Correction at adjusting nut (46)

Operate control lever after each  
manifold-pressure compensator pressure  
change.

Overflow restriction 0.75 mm - Part No.  
..343,..344

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 5.9 D3
Edition : 06.12.91
replaces : 11.11.91
Calibrating oil : ISO-4113
Injection pump : VE6/12F1350R404-2
Type number : 0 460 426 171
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8060.25.4000

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 0.90...1.30

Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 6.10...6.70
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 78.00...79.00

Shutoff
electromagnet Volt: 24
Dispersion cm3/: 3.5
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000S.: 50.00...51.00

Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 4.0
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1475
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 49.00...57.00

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.00...120.00
mind 1000S.: 70.00

Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1000  
 Charge press hPa: 1000  
 TD travel mm: 0.90...1.30  
 mm: (0.20...2.00)

Shutoff  
 electromagnet Volt: 24  
 3rd speed 1/min: 1100  
 Charge press hPa: 1000  
 TD travel mm: 1.90...2.70  
 mm: (1.40...3.20)

Shutoff  
 electromagnet Volt: 24  
 4th speed 1/min: 1350  
 Charge press hPa: 1000  
 TD travel mm: 3.70...4.50  
 mm: (3.20...5.00)

Shutoff  
 electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 1000  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 6.10...6.70  
 bar: (5.80...7.00)

Shutoff  
 electromagnet Volt: 24  
 2nd speed 1/min: 600  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 4.20...4.80  
 bar: (3.90...5.10)

Shutoff  
 electromagnet Volt: 24  
 3rd speed 1/min: 1350  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 7.70...8.30  
 bar: (7.40...8.60)

Shutoff  
 electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Overflow quantity cm<sup>3</sup>/10s: 41.70...83.40  
 (26.70...98.40)

2nd speed 1/min: 1150  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Overflow quantity cm<sup>3</sup>/10s: 55.60...139.00  
 (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 600\*  
 Charge-air pressure-setting point hPa: 400  
 LDA-stroke mm: 7.0  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/1000s.: 66.50...67.50  
 (57.50...65.50)

2nd speed 1/min: 1475  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/1000s.: 49.00...57.00  
 (47.00...59.00)

3rd speed 1/min: 1625  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/1000s.: 0.00...3.00  
 (0.00...3.00)

5th speed 1/min: 1525  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/1000s.: 31.00...37.00  
 (28.00...40.00)

9th speed 1/min: 1350  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/1000s.: 68.00...71.00  
 (66.00...73.00)

10th speed 1/min: 1200  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/1000s.: 71.50...77.50  
 (70.00...77.00)

12th speed 1/min: 700  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/1000s.: 78.00...79.00  
 (75.00...82.00)

18th speed 1/min: 600  
 Charge press. hPa: -  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/1000s.: 50.00...51.00  
 (47.00...54.00)

20th speed 1/min: 600  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/1000s.: 80.00...84.00  
 (78.50...85.50)

Mech. shutoff:  
Mech. Abstimmung:

1st speed 1/min: 1350  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 13.00...17.00  
1000S.: (10.00...20.00)

Dispersion cm<sup>3</sup>/: 2.0  
1000S.: (5.0)

2nd speed 1/min: 475  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 70.00...120.00  
1000S.: (70.00...120.00)

2nd speed 1/min: 250  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 40.00...60.00  
1000S.: (40.00...60.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 70.00...120.00  
1000S.: (70.00...120.00)

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K mm: 3.7  
KF mm: KOT  
MS mm: 0.7...1.1  
LDA stroke mm: 7.0  
XK mm: 20.0...22.0  
XL mm: 11.9...15.3

Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each  
manifold-pressure compensator pressure  
change.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 6,0 F  
Edition : 09.12.91  
replaces : -  
Calibrating oil : ISO 4113  
Injection pump : VE6/12F1250R406  
Type number : 0 460 426 179

Customer-specific information  
Customer : PERKINS

Engine : Q20 PHASER

TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...42.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.0...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: 0.25  
(from BDC): ±0.02(0.04)

Start of delivery block  
Piston stroke mm: 1,0  
mm: ±0.02(0.06)

Outlet : C

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Charge press. hPa: 1200

Setting value mm: 1.40...1.80  
Shutoff  
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 700  
Charge press hPa: 1200  
Setting value bar: 4.70...5.30  
Shutoff  
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700  
Charge press. hPa: 1200  
Del. quantity cm3/  
1000S.: 81.0...82.0  
Shutoff  
electromagnet Volt: 24  
Dispersion cm3/  
1000S.: -

Full-load del. w/out charge press.:

Speed 1/min: 700  
Del. quantity cm3/  
1000S.: 59.5...61.5  
Shutoff  
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 325  
Charge press hPa: -  
Del. quantity cm3/  
1000S.: 8.0...12.0  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/  
1000S.: -

Full-load speed regulation

Speed 1/min: 1400  
Charge press hPa: 1200  
Del. quantity cm3/  
1000S.: 37.0...43.0  
Shutoff  
electromagnet Volt: 24

Start:

Speed 1/min: 100  
Charge press hPa: -  
Del. quantity cm3/  
mind 1000S.: 100.0  
Shutoff  
electromagnet Volt: 24



Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900  
Charge press hPa: 1200  
TD travel mm: 0.4...1.2  
mm: (0.1...1.5)  
electromagnet Volt: 24  
2nd speed 1/min: 1000  
Charge press hPa: 1200  
TD travel mm: 1.4...1.8  
mm: (0.9...2.3)

Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 1100  
Charge press hPa: 1200  
TD travel mm: 1.9...2.7  
mm: (1.6...3.0)

Shutoff  
electromagnet Volt: 24  
4th speed 1/min: 1250  
Charge press hPa: 1200  
TD travel mm: 1.9...2.7  
mm: (1.6...3.0)

Shutoff  
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 700  
Charge press. hPa: 1200  
Supply-pump pressure bar: 4.7...5.3  
Shutoff

electromagnet Volt: 24  
2nd speed 1/min: 1100  
Charge press. hPa: 1200  
Supply-pump pressure bar: 6.3...6.9  
Shutoff

electromagnet Volt: 24  
3rd speed 1/min: 1250  
Charge press. hPa: 1200  
Supply-pump pressure bar: 6.9...7.5  
Shutoff

electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24  
Overflow quantity cm<sup>3</sup>/10s: 41.6...83.3  
(26.6...98.3)  
2nd speed 1/min: 1250  
Charge press. hPa: 1200

Shutoff  
electromagnet Volt: 24  
Overflow quantity cm<sup>3</sup>/10s: 55.5...138.8  
(40.5...153.8)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 700  
LDA-stroke mm: 6.7  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000s.: 76.0...77.0  
(73.0...80.0)

2nd speed 1/min: 1480  
Charge press. hPa: 1200  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000s.: 0.0...7.0

3rd speed 1/min: 1400  
Charge press. hPa: 1200  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000s.: 37.0...43.0  
(34.0...46.0)

4th speed 1/min: 1350  
Charge press. hPa: 1200  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000s.: 56.0...64.0  
(54.0...66.0)

5th speed 1/min: 1250  
Charge press. hPa: 1200  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000s.: 83.0...86.0  
(81.0...88.0)

6th speed 1/min: 1000  
Charge press. hPa: 1200  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000s.: 77.0...80.0  
(75.0...82.0)

7th speed 1/min: 700  
Charge press. hPa: 1200  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000s.: 81.0...82.0  
(78.0...85.0)

8th speed 1/min: 700  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000s.: 60.5...61.5  
(57.5...64.5)

9th speed 1/min: 500  
Charge press. hPa: -

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 62.5...65.5  
1000S.: (60.5...67.5)

Mech. shutoff:  
Mech. Abst.ellung:

1st speed 1/min: 1250  
Charge press. hPa: 1200  
Del. quantity cm<sup>3</sup>/: 0.0...3.0  
1000S.: -

Shutoff  
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 325  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 0.0...3.0  
1000S.: -

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 325  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 8.0...12.0  
1000S.: (5.0...15.0)

Dispersion cm<sup>3</sup>/: 5.0  
1000S.: -

2nd speed 1/min: 420

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.0...3.0  
1000S.: -

3rd speed 1/min: 350  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 2.0...8.0  
1000S.: (0.0...10.0)

Automatic starting fuel delivery:

1st speed 1/min: 130  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 110.0...170.0  
1000S.: -

2nd speed 1/min: 230  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 50.0...90.0  
1000S.: -

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation  
K mm: -  
KF mm: K-OT  
MS mm: 0.9...1.3  
SVS max. mm: 3.5  
LDA stroke mm: 6.7  
XK mm: 21.8...23.8  
XL mm: 10.2...13.6

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut (46)

Overflow restriction 0.55 mm - Part No. ..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 6,0 F1
Edition : 09.12.91
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE6/12F125DR406
Type number : 0 460 426 179
Customer Part-No. : 2 643 J61 3

Customer-specific information
Customer : PERKINS

Engine : Q20 PHASER

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...42.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.0...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.25
(from BDC): +/-0.02(0.04)

Start of delivery block
Piston stroke mm: 1,0
mm: +/-0.02(0.06)

Outlet : C

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000

D01

Charge press. hPa: 1200
Setting value mm: 1.40...1.80
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 700
Charge press hPa: 1200
Setting value bar: 4.70...5.30
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 700
Charge press. hPa: 1200
Del. quantity cm3/
1000S.: 81.0...82.0
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 5.0
1000S.: -

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 59.5...61.5
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 325
Charge press hPa: -
Del. quantity cm3/
1000S.: 8.0...12.0
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.0
1000S.: -

Full-load speed regulation

Speed 1/min: 1400
Charge press hPa: 1200
Del. quantity cm3/
1000S.: 37.0...43.0
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Charge press hPa: -
Del. quantity cm3/: -
mind 1000S.: 100.0
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900  
Charge press hPa: 1200  
TD travel mm: 0.4...1.2  
mm: (0.1...1.5)

electromagnet Volt: 12  
2nd speed 1/min: 1000  
Charge press hPa: 1200  
TD travel mm: 1.4...1.8  
mm: (0.9...2.3)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1100  
Charge press hPa: 1200  
TD travel mm: 1.9...2.7  
mm: (1.6...3.0)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 1250  
Charge press hPa: 1200  
TD travel mm: 1.9...2.7  
mm: (1.6...3.0)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 700  
Charge press. hPa: 1200  
Supply-pump  
pressure bar: 4.7...5.3

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1100  
Charge press. hPa: 1200  
Supply-pump  
pressure bar: 6.3...6.9

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
Charge press. hPa: 1200  
Supply-pump  
pressure bar: 6.9...7.5

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 41.6...83.3  
(26.6...98.3)  
2nd speed 1/min: 1250

Charge press. hPa: 1200  
Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 55.5...138.8  
(40.5...153.8)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting  
point hPa: 700  
LDA-stroke mm: 6.7  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 76.0...77.0  
(73.0...80.0)

2nd speed 1/min: 1480  
Charge press. hPa: 1200  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 0.0...7.0  
-

3rd speed 1/min: 1400  
Charge press. hPa: 1200  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 37.0...43.0  
(34.0...46.0)

4th speed 1/min: 1350  
Charge press. hPa: 1200  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 56.0...64.0  
(54.0...66.0)

5th speed 1/min: 1250  
Charge press. hPa: 1200  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 83.0...86.0  
(81.0...88.0)

6th speed 1/min: 1000  
Charge press. hPa: 1200  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 77.0...80.0  
(75.0...82.0)

7th speed 1/min: 700  
Charge press. hPa: 1200  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 81.0...82.0  
(78.0...85.0)

8th speed 1/min: 700  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 60.5...61.5  
(57.5...64.5)

9th speed 1/min: 500

Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 62.5...65.5  
1000S.: (60.5...67.5)

Mech. shutoff:  
Mech. Abst.ellung:

1st speed 1/min: 1250  
Charge press. hPa: 1200  
Del. quantity cm<sup>3</sup>/: 0.0...3.0  
1000S.: -

Shutoff  
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 325  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 0.0...3.0  
1000S.: -

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 325  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 8.0...12.0  
1000S.: (5.0...15.0)

Dispersion cm<sup>3</sup>/: 5.0  
1000S.: -

2nd speed 1/min: 420

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.0...3.0  
1000S.: -

3rd speed 1/min: 350

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 2.0...8.0  
1000S.: (0.0...10.0)

Automatic starting fuel delivery:

1st speed 1/min: 130  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 110.0...170  
1000S.: -

2nd speed 1/min: 230  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 50.0...90.0  
1000S.: -

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: -  
KF mm: K-OT  
MS mm: 0.9...1.3  
SVS max. mm: 3.5  
LDA stroke mm: 6.7  
XK mm: 21.8...23.8  
XL mm: 10.2...13.6

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut (46)

Overflow restriction 0.55 mm - Part No. ..303

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 6,0 F2  
Edition : 09.12.91  
replaces : -  
Calibrating oil : ISO 4113  
Injection pump : VE6/12F1250R406  
Type number : 0 460 426 179  
Customer Part-No. : 2 643 J61 4

Customer-specific information  
Customer : PERKINS

Engine : Q20 PHASER

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...42.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.0...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: 0.25  
(from BDC):  $\pm 0.02(0.04)$

Start of delivery block  
Piston stroke mm: 1,0  
mm:  $\pm 0.02(0.06)$

Outlet : C

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000

Charge press. hPa: 1200  
Setting value mm: 1.40...1.80  
Shutoff  
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 700  
Charge press hPa: 1200  
Setting value bar: 4.70...5.30  
Shutoff  
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700  
Charge press. hPa: 1200  
Del. quantity cm<sup>3</sup>/  
1000S.: 81.0...82.0  
Shutoff  
electromagnet Volt: 24  
Dispersion cm<sup>3</sup>/: 5.0  
1000S.: -

Full-load del. w/out charge press.:

Speed 1/min: 700  
Del. quantity cm<sup>3</sup>/  
1000S.: 59.5...61.5  
Shutoff  
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 325  
Charge press hPa: -  
Del. quantity cm<sup>3</sup>/  
1000S.: 8.0...12.0  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 5.0  
1000S.: -

Full-load speed regulation

Speed 1/min: 1400  
Charge press hPa: 1200  
Del. quantity cm<sup>3</sup>/  
1000S.: 37.0...43.0  
Shutoff  
electromagnet Volt: 24

Start:

Speed 1/min: 100  
Charge press hPa: -  
Del. quantity cm<sup>3</sup>/: -  
mind 1000S.: 100.0  
Shutoff  
electromagnet Volt: 24

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900  
Charge press hPa: 1200  
TD travel mm: 0.4...1.2  
mm: (0.1...1.5)

electromagnet Volt: 24  
2nd speed 1/min: 1000  
Charge press hPa: 1200  
TD travel mm: 1.4...1.8  
mm: (0.9...2.3)

Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 1100  
Charge press hPa: 1200  
TD travel mm: 1.9...2.7  
mm: (1.6...3.0)

Shutoff  
electromagnet Volt: 24  
4th speed 1/min: 1250  
Charge press hPa: 1200  
TD travel mm: 1.9...2.7  
mm: (1.6...3.0)

Shutoff  
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 700  
Charge press. hPa: 1200  
Supply-pump pressure bar: 4.7...5.3

Shutoff  
electromagnet Volt: 24  
2nd speed 1/min: 1100  
Charge press. hPa: 1200  
Supply-pump pressure bar: 6.3...6.9

Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 1250  
Charge press. hPa: 1200  
Supply-pump pressure bar: 6.9...7.5

Shutoff  
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24  
Overflow quantity cm<sup>3</sup>/10s: 41.6...83.3  
cm<sup>3</sup>/10s: (26.6...98.3)  
2nd speed 1/min: 1250

Charge press. hPa: 1200  
Shutoff  
electromagnet Volt: 24  
Overflow quantity cm<sup>3</sup>/10s: 55.5...138.8  
cm<sup>3</sup>/10s: (40.5...153.8)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 700  
LDA-stroke mm: 6.7  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000S.: 76.0...77.0  
cm<sup>3</sup>/1000S.: (73.0...80.0)

2nd speed 1/min: 1480  
Charge press. hPa: 1200  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000S.: 0.0...7.0  
cm<sup>3</sup>/1000S.: -

3rd speed 1/min: 1400  
Charge press. hPa: 1200  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000S.: 37.0...43.0  
cm<sup>3</sup>/1000S.: (34.0...46.0)

4th speed 1/min: 1350  
Charge press. hPa: 1200  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000S.: 56.0...64.0  
cm<sup>3</sup>/1000S.: (54.0...66.0)

5th speed 1/min: 1250  
Charge press. hPa: 1200  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000S.: 83.0...86.0  
cm<sup>3</sup>/1000S.: (81.0...88.0)

6th speed 1/min: 1000  
Charge press. hPa: 1200  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000S.: 77.0...80.0  
cm<sup>3</sup>/1000S.: (75.0...82.0)

7th speed 1/min: 700  
Charge press. hPa: 1200  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000S.: 81.0...82.0  
cm<sup>3</sup>/1000S.: (78.0...85.0)

8th speed 1/min: 700  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000S.: 60.5...61.5  
cm<sup>3</sup>/1000S.: (57.5...64.5)

9th speed 1/min: 500

Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 62.5...65.5  
1000S.: (60.5...67.5)

Mech. shutoff:  
Mech. Abst.ellung:

1st speed 1/min: 1250  
Charge press. hPa: 1200  
Del. quantity cm<sup>3</sup>/: 0.0...3.0  
1000S.: -

Shutoff  
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 325  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 0.0...3.0  
1000S.: -

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 325  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 8.0...12.0  
1000S.: (5.0...15.0)

Dispersion cm<sup>3</sup>/: 5.0  
1000S.: -

2nd speed 1/min: 420  
Shutoff

electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.0...3.0  
1000S.: -

3rd speed 1/min: 350  
Shutoff

electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 2.0...8.0  
1000S.: (0.0...10.0)

Automatic starting fuel delivery:

1st speed 1/min: 130  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 110.0...170.0  
1000S.: -

2nd speed 1/min: 230  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 50.0...90.0  
1000S.: -

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: K-OT
MS	mm: 0.9...1.3
SVS max.	mm: 3.5
LDA stroke	mm: 6.7
XK	mm: 21.8...23.8
XL	mm: 10.2...13.6

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut (46)

Overflow restriction 0.55 mm - Part No. ..303



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 7,2 T2  
Edition : 10.12.91  
replaces : 08.10.91  
Calibrating oil : ISO 4113

Injection pump : VE6/12F1200R307-2  
Type number : 0 460 426 182

Customer-specific information  
Customer : MAN

Engine : D 0826 LF 05

Power KW: 140

TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 110

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.2  
(from BDC): +0,02(0,04)

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 800  
Charge press. hPa: 1000  
Setting value mm: 1.70...2.10

Supply-pump pressure

007

Speed 1/min: 800  
Charge press hPa: 1000  
Setting value bar: 6.10...6.70

Full-load del. with charge press.:

Speed 1/min: 1000  
Charge press. hPa: 1000  
Del. quantity cm3/  
1000S.: 92.50...93.50  
Dispersion cm3/: 4.0  
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm3/  
1000S.: 56.50...57.50

Low-idle speed regulation

Speed 1/min: 300  
Charge press hPa: -  
Del. quantity cm3/  
1000S.: 6.50...13.50  
Del. quantity cm3/: 6.0  
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1280  
Charge press hPa: 1000  
Del. quantity cm3/  
1000S.: 62.00...68.00

Start:

Speed 1/min: 100  
Charge press hPa: -  
Del. quantity cm3/: -  
mind 1000S.: 60.0

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1000  
Charge press hPa: 1000  
Inj.-qty. cm3/  
difference 1000S.: 16.0...24.0 \*  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 1000  
Charge press hPa: 1000  
TD-travel  
difference mm: 0.00...0.20 \*

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800  
Charge press hPa: 1000  
TD travel mm: 1.60...2.10  
mm: (1.20...2.60)  
2nd speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 3.90...4.70  
mm: (3.60...5.00)  
3rd speed 1/min: 1100  
Charge press hPa: 1000  
TD travel mm: 4.50...5.30  
mm: (4.20...5.60)

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 4.20...4.80  
2nd speed 1/min: 800  
Charge press. hPa: 1000  
Supply-pump pressure bar: 6.10...6.70  
3rd speed 1/min: 1000  
Charge press. hPa: 1000  
Supply-pump pressure bar: 7.90...8.50

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Overflow quantity cm<sup>3</sup>/10s: 41.60...83.30  
cm<sup>3</sup>/10s: (26.60...98.30)  
2nd speed 1/min: 1200  
Charge press. hPa: 1000  
Overflow quantity cm<sup>3</sup>/10s: 55.50...138.80  
cm<sup>3</sup>/10s: (40.50...153.80)

Delivery-quant. and breakaway char.:

1st speed 1/min: 500\*  
Charge-air pressure-setting point hPa: 350  
LDA-stroke mm: 7.5  
Del. quantity cm<sup>3</sup>/1000S.: 81.00...82.00  
cm<sup>3</sup>/1000S.: (79.00...84.00)  
2nd speed 1/min: 1450  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000S.: 0.00...3.0  
cm<sup>3</sup>/1000S.: -  
3rd speed 1/min: 1350  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000S.: 0.00...15.00  
cm<sup>3</sup>/1000S.: -  
4th speed 1/min: 1300  
Charge press. hPa: 1000

Del. quantity cm<sup>3</sup>/1000S.: 15.00...55.00  
cm<sup>3</sup>/1000S.: -  
5th speed 1/min: 1280  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000S.: 62.00...68.00  
cm<sup>3</sup>/1000S.: (60.50...69.50)  
6th speed 1/min: 1200  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000S.: 85.00...90.00  
cm<sup>3</sup>/1000S.: (83.50...91.50)  
7th speed 1/min: 1000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000S.: 92.50...93.50  
cm<sup>3</sup>/1000S.: (90.50...95.50)  
8th speed 1/min: 800  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000S.: 91.00...96.00  
cm<sup>3</sup>/1000S.: (89.50...97.50)  
9th speed 1/min: 600  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000S.: 97.00...102.00  
cm<sup>3</sup>/1000S.: (95.5...103.50)  
10th speed 1/min: 500  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/1000S.: 56.50...57.50  
cm<sup>3</sup>/1000S.: (54.50...59.50)  
11th speed 1/min: 500  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000S.: 99.00...108.00  
cm<sup>3</sup>/1000S.: (97.50...109.50)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1200  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000S.: 0.00...3.00  
cm<sup>3</sup>/1000S.: -  
Shutoff electromagnet volt: -

Idle delivery:

1st speed 1/min: 300  
Del. quantity cm<sup>3</sup>/1000S.: 6.50...13.50  
cm<sup>3</sup>/1000S.: (4.50...15.50)  
2nd speed 1/min: 400  
Del. quantity cm<sup>3</sup>/1000S.: 0.00...3.00  
cm<sup>3</sup>/1000S.: -

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1000  
Charge press. hPa: 1000  
Inj.-qty. cm<sup>3</sup>/difference 1000S.: 10.0...12.0 #  
cm<sup>3</sup>/difference 1000S.: -  
2nd speed 1/min: 1000  
Charge press. hPa: 1000

Inj.-qty. cm<sup>3</sup>/: 2.00...8.00 '  
difference 1000S.: -

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1000  
Charge press. hPa: 1000  
TD-travel : 0.00...1.50 '  
difference mm: -

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1000  
Charge press. hPa: 1000  
Supply pump-  
pressure : 0.00...0.20 #

Automatic starting fuel delivery:

1st speed 1/min: 220  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 75.00...125.00  
1000S.: -

2nd speed 1/min: 380  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 55.00...85.00  
1000S.: -

Shutoff electromagnet:

Cut-in  
min voltage : -  
Rated voltage : -

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: -
MS	mm: 0.8...1.2
SVS max.	mm: 4.5
LDA stroke	mm: 7.5

Remarks:

Operate control lever after each  
manifold-pressure compensator pressure  
change.

\* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 W80  
 Edition : 09.12.91  
 replaces : 22.05.91  
 Calibrating oil : ISO-4113

Injection pump : VE6/12F1250R419  
 Type number : 0 460 426 184  
 Customer Part-No. :

Customer-specific information  
 Customer : CDC

Engine : 6 BTA 590A

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
 return temp. °C  
 with thermometer : 40.00...48.00  
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
 assembly : 1 688 901 109

Opening  
 Pressure bar: 207.00...210.00

Perforated-plate  
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
 x Wall thickness : 2.00  
 x Length mm: 840

Start of delivery  
 Prestroke mm: -  
 (from BDC): -

Start of delivery block  
 Piston stroke mm: 1.25  
 mm: ±0.02(0.06)

Outlet : D

Injection-pump setting values  
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
 Charge press. hPa: 1000  
 Setting value mm: 1.60...2.00  
 Shutoff  
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000  
 Charge press hPa: 1000  
 Setting value bar: 6.30...6.90  
 Shutoff  
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 850  
 Charge press. hPa: 1000  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 85.00...86.00

Shutoff  
 electromagnet Volt: 12  
 Dispersion cm<sup>3</sup>/: 5.0  
 1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 59.50...60.50

Shutoff  
 electromagnet Volt: 12  
 Dispersion cm<sup>3</sup>/: 5.0  
 1000S.: (6.0)

Low-idle speed regulation

Speed 1/min: 400  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 12.00...16.00

Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 5.5  
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1325  
 Charge press hPa: 1000  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 75.00...81.00

Shutoff  
 electromagnet Volt: 12

Start:

Speed 1/min: 100  
 Del. quantity cm<sup>3</sup>/: 80.00...160.00  
 mind 1000S.: 80.00

Shutoff  
 electromagnet Volt: 12

Inspection-pump test specifications  
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250  
 Charge press hPa: 1000  
 TD travel mm: 2.30...3.10  
 mm: (2.00...3.40)

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1000  
 Charge press hPa: 1000  
 TD travel mm: 1.60...2.00  
 mm: (1.10...2.50)

Shutoff  
 electromagnet Volt: 12  
 7.Rotacao 1/min: 850  
 Charge press. hPa: 1000  
 TD travel mm: 0.8...1.6  
 mm: (0.5...1.9)

Shutoff  
 electromagnet Volt: 12  
 8th speed 1/min: 450\*  
 TD travel mm: 2.0...3.0  
 mm: (1.8...3.2)

KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 850  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 5.70...6.30  
 Shutoff  
 electromagnet Volt: 12  
 2nd speed 1/min: 1000  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 6.30...6.90  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1250  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 7.40...8.00  
 Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 500  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 3.90...4.50  
 Shutoff  
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 41.70...83.40  
 quantity cm<sup>3</sup>/10s: (26.70...98.40)  
 2nd speed 1/min: 1250  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 55.60...139.00  
 quantity cm<sup>3</sup>/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700\*  
 Charge-air pressure-setting point hPa: 230  
 LDA-stroke mm: 7.0  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 66.00...67.00  
 1000S.: (62.50...70.50)  
 2nd speed 1/min: 1480  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: -  
 3rd speed 1/min: 1430  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 15.00...45.00  
 1000S.: -  
 5th speed 1/min: 1325  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 75.00...81.00  
 1000S.: (72.00...84.00)  
 9th speed 1/min: 1250  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 85.5...88.5  
 1000S.: (84.00...90.00)  
 10th speed 1/min: 1050  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 87.00...90.00  
 1000S.: (85.00...92.00)  
 12th speed 1/min: 850  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 85.00...86.00  
1000S.: (82.50...88.50)  
18th speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 59.50...60.50  
1000S.: (56.00...64.00)  
20th speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 93.50...101.5  
1000S.: -

Mech. shutoff:  
Mech. Abststellung:

1st speed 1/min: 1250  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -

Shutoff  
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 12.00...16.00  
1000S.: (9.00...19.00)

Dispersion cm<sup>3</sup>/: 5.5  
1000S.: (7.0)

2nd speed 1/min: 460  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 80.00...160.00  
1000S.: -

2nd speed 1/min: 240  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 50.00...80.00  
1000S.: -

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 80.00...160.00  
1000S.: -

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.6...3.8  
KF mm: K-OT  
MS mm: 0.7...1.1  
LDA stroke mm: 7.0

Remarks:  
: C.D.C. #391 8991  
:

Operate control lever after each  
manifold-pressure compensator pressure  
change.

\* Correction at adjusting nut (46)

\* Unscrew KSB ball valve 2 mm

Overflow restriction 0.55 mm - Part No.  
..303

Heavy-duty fuel-injection pump for  
DI-engines: only test using timing-  
device-travel measuring device with  
metal jacket

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 W82  
Edition : 09.12.91  
replaces : 22.05.91  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/12F125DR419-1  
Type number : 0 460 426 186  
Customer Part-No. :

Customer-specific information  
Customer : CDC

Engine : 6 BTA 590A

Power KW: 118  
Speed 1/min: 2500

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 109

Opening  
Pressure bar: 207.00...210.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: -  
(from BDC): -

Start of delivery block  
Piston stroke mm: 1.25  
mm: ±0,02(0,006)

Outlet : D

Injection-pump setting values

Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Charge press. hPa: 1000  
Setting value mm: 1.60...2.00  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000  
Charge press hPa: 1000  
Setting value bar: 6.30...6.90  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 850  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 85.00...86.00  
Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/: 5.0  
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm<sup>3</sup>/  
1000S.: 59.50...60.50  
Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/: 5.0  
1000S.: (6.0)

Low-idle speed regulation

Speed 1/min: 400  
Del. quantity cm<sup>3</sup>/  
1000S.: 12.00...16.00  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 5.5  
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1325  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 75.00...81.00  
Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 80.00...160.00  
mind 1000S.: 80.00  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250  
Charge press hPa: 1000  
TD travel mm: 2.30...3.10  
mm: (2.00...3.40)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 1.60...2.00  
mm: (1.10...2.50)

Shutoff  
electromagnet Volt: 12  
7. Rotacao 1/min: 850  
Charge press. hPa: 1000  
TD travel mm: 0.8...1.6  
mm: (0.5...1.9)

Shutoff  
electromagnet Volt: 12  
8th speed 1/min: 450\*  
TD travel mm: 2.00...3.00  
mm: (1.80...3.20)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 850  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 5.70...6.30

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1000  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 6.30...6.90

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 7.40...8.00

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 500  
Charge press. hPa: 1000

Supply-pump  
pressure bar: 3.90...4.50  
Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.70...98.40)

2nd speed 1/min: 1250  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...139.00  
quantity cm<sup>3</sup>/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting  
point hPa: 230  
LDA-stroke mm: 7.0  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 66.00...67.00  
1000S.: (62.50...70.50)

2nd speed 1/min: 1480  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -

3rd speed 1/min: 1430  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 15.00...45.00  
1000S.: -

5th speed 1/min: 1325  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 75.00...81.00  
1000S.: (72.00...84.00)

9th speed 1/min: 1250  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 85.50...88.50  
1000S.: (84.00...90.00)

10th speed 1/min: 1050  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 87.00...90.00  
1000S.: (85.00...92.00)



12th speed 1/min: 850  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 85.00...86.00  
1000S.: (82.50...88.50)  
18th speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 59.50...60.50  
1000S.: (56.00...64.00)  
20th speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
1000S.: (93.5...101.5)

Mech. shutoff:  
Mech. Abst.ellung:

1st speed 1/min: 1250  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -

Shutoff  
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 12.00...16.00  
1000S.: (9.00...19.00)

Dispersion cm<sup>3</sup>/: 5.5  
1000S.: (7.0)

2nd speed 1/min: 460  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 80.00...160.00  
1000S.: -

2nd speed 1/min: 240  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 50.00...80.00  
1000S.: -

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 80.00...160.00  
1000S.: -

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.6...3.8  
KF mm: K-OT  
MS mm: 0.7...1.1  
LDA stroke mm: 7.0

Remarks:  
: C.D.C. # 391 3442  
Operate control lever after each  
manifold-pressure compensator pressure  
change.

\* Correction at adjusting nut (46)

Overflow restriction 0.55 mm - Part No.  
..303

Heavy-duty fuel-injection pump for  
DI-engines: only test using timing-  
device-travel measuring device with  
metal jacket

\* Unscrew KSB ball valve 2 mm

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 7.2 T9  
Edition : 06.12.91  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/11F1350R434  
Type number : 0 460 426 189  
Customer Part-No. :

Customer-specific information  
Customer : MAN

Engine : D 0826 OH

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 110

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.20  
(from BDC):  $\pm 0.02(0.04)$

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Setting value mm: 2.10...2.50  
Shutoff  
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000  
Setting value bar: 5.50...6.10  
Shutoff  
electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 70.50...71.50  
Shutoff  
electromagnet Volt: 24  
Dispersion cm<sup>3</sup>/: 4.0  
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 300  
Del. quantity cm<sup>3</sup>/  
1000S.: 7.00...13.00  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 6.0  
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1390  
Del. quantity cm<sup>3</sup>/  
1000S.: 51.00...57.00  
Shutoff  
electromagnet Volt: 24

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 60.00...140.00  
mind 1000S.: 60.00  
Shutoff  
electromagnet Volt: 24

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100  
TD travel mm: 3.10...3.90  
mm: (2.90...4.10)  
Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 1000  
TD travel mm: 2.10...2.50  
mm: (1.60...3.00)

Shutoff  
electromagnet Volt: 24  
4th speed 1/min: 900

TD travel mm: 0.70...1.50  
mm: (0.40...1.80)

Shutoff  
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump pressure bar: 3.30...3.90  
bar: (3.00...4.20)

Shutoff  
electromagnet Volt: 24

2nd speed 1/min: 1000  
Supply-pump pressure bar: 5.50...6.10  
bar: (5.20...4.60)

Shutoff  
electromagnet Volt: 24

3rd speed 1/min: 1300  
Supply-pump pressure bar: 7.40...8.00  
bar: (7.10...8.30)

Shutoff  
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Shutoff  
electromagnet Volt: 24

Overflow quantity cm<sup>3</sup>/10s: 41.70...83.40  
(26.70...98.40)

2nd speed 1/min: 1300  
Shutoff  
electromagnet Volt: 24

Overflow quantity cm<sup>3</sup>/10s: 55.60...139.00  
(40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1550  
Shutoff  
electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

3rd speed 1/min: 1520  
Shutoff  
electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 0.00...15.00  
1000S.: (0.00...15.00)

4th speed 1/min: 1450  
Del. quantity cm<sup>3</sup>/: 15.00...55.00  
1000S.: (15.00...55.00)

5th speed 1/min: 1390  
Shutoff  
electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 51.00...57.00  
1000S.: (48.50...59.50)

9th speed 1/min: 1300  
Shutoff  
electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 66.50...69.50  
1000S.: (65.00...71.00)

11th speed 1/min: 800  
Shutoff  
electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 65.00...69.00  
1000S.: (63.50...70.50)

12th speed 1/min: 1000  
Shutoff  
electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 70.50...71.50  
1000S.: (68.50...73.50)

20th speed 1/min: 600  
Shutoff  
electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 62.00...66.00  
1000S.: (60.50...67.50)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1300  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 300  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 300  
Shutoff  
electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 7.00...13.00  
1000S.: (5.00...15.00)

Dispersion cm<sup>3</sup>/: 6.0  
1000S.: (6.5)

2nd speed 1/min: 450  
Shutoff  
electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 400  
Shutoff  
electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 75.00...145.00  
1000S.: (75.00...145.00)

2nd speed 1/min: 500  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 35.00...75.00  
1000S.: (35.00...75.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...140.00  
1000S.: (60.00...140.00)

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: KOT
MS	mm: 0.6...1.0
SVS max.	mm: 3.6
XK	mm: 17.0...19.0
XL	mm: 12.6...16.0

Remarks:

:  
:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 7.2 T7  
Edition : 06.12.91  
replaces : -  
Calibrating oil : ISO-4113  
Injection pump : VE6/11F1350R438  
Type number : 0 460 426 191  
Customer Part-No. :

Customer-specific information  
Customer : MAN

Engine : D 0826 GF

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 110

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.20  
(from BDC): ±0.02(0.04)

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Setting value mm: 2.10...2.50  
Shutoff  
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000  
Setting value bar: 5.50...6.10  
Shutoff  
electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 70.50...71.50  
Shutoff  
electromagnet Volt: 24  
Dispersion cm<sup>3</sup>/: 4.0  
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 300  
Del. quantity cm<sup>3</sup>/  
1000S.: 7.00...13.00  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 6.0  
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1390  
Del. quantity cm<sup>3</sup>/  
1000S.: 51.00...57.00  
Shutoff  
electromagnet Volt: 24

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 60.00...140.00  
mind 1000S.: 60.00  
Shutoff  
electromagnet Volt: 24

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100  
TD travel mm: 3.00...3.80  
mm: (2.70...4.10)  
Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 1000  
TD travel mm: 2.10...2.50  
mm: (1.60...3.00)

Shutoff  
electromagnet Volt: 24  
4th speed 1/min: 900

TD travel           mm: 0.70...1.50  
                       mm: (0.40...1.80)  
 Shutoff  
 electromagnet Volt: 24  
 Supply-pump pressure characteristic:  
 1st speed       1/min: 600  
 Supply-pump  
 pressure        bar: 3.30...3.90  
                   bar: (3.00...4.20)  
 Shutoff  
 electromagnet Volt: 24  
 2nd speed       1/min: 1000  
 Supply-pump  
 pressure        bar: 5.50...6.10  
                   bar: (5.20...4.60)  
 Shutoff  
 electromagnet Volt: 24  
 3rd speed       1/min: 1300  
 Supply-pump  
 pressure        bar: 7.50...8.10  
                   bar: (7.20...8.40)  
 Shutoff  
 electromagnet Volt: 24  
 Overflow quantity at overflow valve:  
 1st speed       1/min: 600  
 Shutoff  
 electromagnet Volt: 24  
 Overflow        : 41.70...83.40  
 quantity       cm3/10s: (26.70...98.40)  
 2nd speed       1/min: 1300  
 Shutoff  
 electromagnet Volt: 24  
 Overflow        : 55.60...139.00  
 quantity       cm3/10s: (40.60...153.00)  
 Delivery-quant. and breakaway char.:  
 2nd speed       1/min: 1550  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm3/: 0.00...3.00  
                       1000S.: (0.00...3.00)  
 3rd speed       1/min: 1470  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm3/: 0.00...15.00  
                       1000S.: (0.00...15.00)  
 4th speed       1/min: 1420  
 Del. quantity cm3/: 15.00...55.00  
                       1000S.: (15.00...55.00)  
 5th speed       1/min: 1390  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm3/: 51.00...57.00  
                       1000S.: (48.50...59.50)

9th speed       1/min: 1300  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm3/: 66.50...69.50  
                       1000S.: (65.00...71.00)  
 11th speed      1/min: 800  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm3/: 65.00...69.00  
                       1000S.: (63.50...70.50)  
 12th speed      1/min: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm3/: 70.50...71.50  
                       1000S.: (68.50...73.50)  
 20th speed      1/min: 600  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm3/: 62.00...66.00  
                       1000S.: (60.50...67.50)  
 Mech. shutoff:  
 Mech. Abstellung:  
 1st speed       1/min: 1300  
 Del. quantity cm3/: 0.00...3.00  
                       1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet volt: 24  
 Electr. shutoff:  
 1st speed       1/min: 300  
 Del. quantity cm3/: 0.00...3.00  
                       1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet volt: -  
 Idle delivery:  
 1st speed       1/min: 300  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm3/: 7.00...13.00  
                       1000S.: (5.00...15.00)  
 Dispersion     cm3/: 6.0  
                       1000S.: (6.5)  
 2nd speed       1/min: 450  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm3/: 0.00...3.00  
                       1000S.: (0.00...3.00)  
 Automatic starting fuel delivery:  
 1st speed       1/min: 250  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm3/: 75.00...145.00  
                       1000S.: (75.00...145.00)

2nd speed 1/min: 450  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 30.00...70.00  
1000s.: (30.00...70.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...140.00  
1000s.: (60.00...140.00)

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: KOT
MS	mm: 0.6...1.0
SVS max.	mm: 3.0

Remarks:

⋮

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 7.2 T8  
Edition : 06.12.91  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/11F1350R438-1  
Type number : 0 460 426 192  
Customer Part-No. :

Customer-specific information  
Customer : MAN

Engine : D 0826 OH

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 110

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.20  
(from BDC): ±0.02(0.04)

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Setting value mm: 2.10...2.50

Supply-pump pressure

Speed 1/min: 1000  
Setting value bar: 5.50...6.10

Full-load del. w/out charge press.:

Speed 1/min: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 70.50...71.50  
Dispersion cm<sup>3</sup>/  
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 300  
Del. quantity cm<sup>3</sup>/  
1000S.: 7.00...13.00  
Del. quantity cm<sup>3</sup>/  
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1390  
Del. quantity cm<sup>3</sup>/  
1000S.: 51.00...57.00

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/  
mind 1000S.: 60.00...140.00  
1000S.: 60.00

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100  
TD travel mm: 3.00...3.80  
mm: (2.70...4.10)  
3rd speed 1/min: 1000  
TD travel mm: 2.10...2.50  
mm: (1.60...3.00)  
4th speed 1/min: 900  
TD travel mm: 0.70...1.50  
mm: (0.40...1.80)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump  
pressure bar: 3.30...3.90  
bar: (3.00...4.20)  
2nd speed 1/min: 1000  
Supply-pump  
pressure bar: 5.50...6.10  
bar: (5.20...4.60)  
3rd speed 1/min: 1300  
Supply-pump  
pressure bar: 7.50...7.8.1  
bar: (7.20...8.40)



Overflow quantity at overflow valve:

1st speed 1/min: 600  
Overflow quantity cm<sup>3</sup>/10s: (41.70...83.40)  
2nd speed 1/min: 1300  
Overflow quantity cm<sup>3</sup>/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1550  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)  
3rd speed 1/min: 1470  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...15.00  
1000S.: (0.00...15.00)  
4th speed 1/min: 1420  
Del. quantity cm<sup>3</sup>/: 15.00...55.00  
1000S.: (15.00...55.00)  
5th speed 1/min: 1390  
Del. quantity cm<sup>3</sup>/: 51.00...57.00  
1000S.: (48.50...59.50)  
9th speed 1/min: 1300  
Del. quantity cm<sup>3</sup>/: 66.50...69.50  
1000S.: (65.00...71.00)  
11th speed 1/min: 800  
Del. quantity cm<sup>3</sup>/: 65.00...69.00  
1000S.: (63.50...70.50)  
12th speed 1/min: 1000  
Del. quantity cm<sup>3</sup>/: 70.50...71.50  
1000S.: (68.50...73.50)  
20th speed 1/min: 600  
Del. quantity cm<sup>3</sup>/: 62.00...66.00  
1000S.: (60.50...67.50)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1300  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300  
Del. quantity cm<sup>3</sup>/: 7.00...13.00  
1000S.: (5.00...15.00)  
Dispersion cm<sup>3</sup>/: 6.0  
1000S.: (6.5)  
2nd speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 250  
Del. quantity cm<sup>3</sup>/: 75.00...145.00  
1000S.: (75.00...145.00)

2nd speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 30.00...70.00  
1000S.: (30.00...70.00)

4th speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 60.00...140.00  
1000S.: (60.00...140.00)

Mounting and assembly dimensions:

Designation

K mm: -  
KF mm: KOT  
MS mm: 0.6...1.0  
SVS max. mm: 3.0

Remarks:

:  
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 7,2 T7
Edition : 10.12.91
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE6/12F1200R307-3
Type number : 0 460 426 194

Customer-specific information
Customer : MAN

Engine : D 0826 LF 05

Power KW: 140

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 110

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): +0,02(0,04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 2,90...3,30

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 7.90...8.50

Full-load del. with charge press.:

Speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 92.50...93.50
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 56.50...57.50

Low-idle speed regulation

Speed 1/min: 300
Charge press hPa: -
Del. quantity cm3/
1000S.: 6.50...13.50
Del. quantity cm3/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1280
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 62.00...68.00

Start:

Speed 1/min: 100
Charge press hPa: -
Del. quantity cm3/: -
mind 1000S.: 60.0

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1000
Charge press hPa: 1000
Inj.-qty. cm3/
difference 1000S.: 13.0...21.0 \*
TD-travel dif.measurement
correctore anticipo iniezione (SV)
1.Speed 1/min: 1000
Charge press hPa: 1000
TD-travel
difference mm: 0.30...0.50 \*

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800  
 Charge press hPa: 1000  
 TD travel mm: 0.30...1.10  
 mm: (0.00...1.40)

2nd speed 1/min: 1000  
 Charge press hPa: 1000  
 TD travel mm: 2.90...3.30  
 mm: (2.40...3.80)

3rd speed 1/min: 1100  
 Charge press hPa: 1000  
 TD travel mm: 3.80...4.60  
 mm: (3.50...4.90)

Supply-pump pressure characteristic:

1st speed 1/min: 500  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 4.20...4.80

2nd speed 1/min: 800  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 6.10...6.70

3rd speed 1/min: 1000  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 7.90...8.50

Overflow quantity at overflow valve:

1st speed 1/min: 500  
 Charge press. hPa: -  
 Overflow quantity cm3/10s: 41.60...83.30  
 (26.60...98.30)

2nd speed 1/min: 1200  
 Charge press. hPa: 1000  
 Overflow quantity cm3/10s: 55.50...138.80  
 (40.50...153.80)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 500\*  
 Charge-air pressure-setting point hPa: 350  
 LDA-stroke mm: 7.5  
 Del. quantity cm3/1000S.: 81.00...82.00  
 (79.00...84.00)

2nd speed 1/min: 1450  
 Charge press. hPa: 1000  
 Del. quantity cm3/1000S.: 0.00...3.0

3rd speed 1/min: 1350  
 Charge press. hPa: 1000  
 Del. quantity cm3/1000S.: 0.00...15.00

4th speed 1/min: 1300  
 Charge press. hPa: 1000

Del. quantity cm3/1000S.: 15.00...55.00

5th speed 1/min: 1280  
 Charge press. hPa: 1000  
 Del. quantity cm3/1000S.: 62.00...68.00  
 (60.50...69.50)

6th speed 1/min: 1200  
 Charge press. hPa: 1000  
 Del. quantity cm3/1000S.: 85.00...90.00  
 (83.50...91.50)

7th speed 1/min: 1000  
 Charge press. hPa: 1000  
 Del. quantity cm3/1000S.: 92.50...93.50  
 (90.50...95.50)

8th speed 1/min: 800  
 Charge press. hPa: 1000  
 Del. quantity cm3/1000S.: 91.00...96.00  
 (89.50...97.50)

9th speed 1/min: 600  
 Charge press. hPa: 1000  
 Del. quantity cm3/1000S.: 97.00...102.00  
 (95.5...103.50)

10th speed 1/min: 500  
 Charge press. hPa: -  
 Del. quantity cm3/1000S.: 56.50...57.50  
 (54.50...59.50)

11th speed 1/min: 500  
 Charge press. hPa: 1000  
 Del. quantity cm3/1000S.: 99.00...108.00  
 (97.50...109.50)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1200  
 Charge press. hPa: 1000  
 Del. quantity cm3/1000S.: 0.00...3.00

Shutoff electromagnet volt: -

Idle delivery:

1st speed 1/min: 300  
 Del. quantity cm3/1000S.: 6.50...13.50  
 (4.50...15.50)

2nd speed 1/min: 400  
 Del. quantity cm3/1000S.: 0.00...3.00

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1000  
 Charge press. hPa: 1000  
 Inj.-qty. cm3/ difference 1000S.: 7.50...9.50 #

2nd speed 1/min: 1000  
 Charge press. hPa: 1000

Inj.-qty. cm<sup>3</sup>/: 2.00...8.00 '  
difference 1000S.: -

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1000  
Charge press. hPa: 1000  
TD-travel : 0.00...1.40 '  
difference mm: -

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1000  
Charge press. hPa: 1000  
Supply pump-  
pressure : 0.00...0.20 #

Automatic starting fuel delivery:

1st speed 1/min: 220  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 75.00...125.00  
1000S.: -

2nd speed 1/min: 380  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 55.00...85.00  
1000S.: -

Shutoff electromagnet:

Cut-in  
min voltage : -  
Rated voltage : -

Mounting and assembly dimensions:

Designation  
K mm: -  
KF mm: -  
MS mm: 0.8...1.2  
SVS max. mm: 4.5  
LDA stroke mm: 7.5

Remarks:  
Operate control lever after each  
manifold-pressure compensator pressure  
change.

\* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS 5,9 K  
 Edition : 09.12.91  
 replaces : -  
 Calibrating oil : ISO-4113  
 Injection pump : VE6/12F1000R369-2  
 Type number : 0 460 426 196  
 Customer Part-No. :

Customer-specific information  
 Customer : CASE

Engine : 6T 590  
 Speed 1/min: 1000

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
 return temp. °C  
 with thermometer : 40.00...48.00  
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
 assembly : 1 688 901 027

Opening  
 Pressure bar: 250.00...253.00

Perforated-plate  
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
 x Wall thickness : 2.00  
 x Length mm: 840

Start of delivery  
 Prestroke mm: 0,3  
 (from BDC): +0,02(0,04)

Start of delivery block  
 Piston stroke mm: 1.5  
 mm: +0,02(0,06)

Outlet : 0

Injection-pump setting values  
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 750  
 Setting value mm: 3.00...3.40  
 Shutoff  
 electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 750  
 Setting value bar: 3.30...3.90  
 Shutoff  
 electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 850  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 66.5...67.5  
 Shutoff  
 electromagnet Volt: 12  
 Dispersion cm<sup>3</sup>/  
 1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 450  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 6.00...12.00  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/  
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1040  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 53.00...59.00  
 Shutoff  
 electromagnet Volt: 24

Start:

Speed 1/min: 100  
 Del. quantity cm<sup>3</sup>/  
 mind 1000S.: 60.00  
 Shutoff  
 electromagnet Volt: 24

Inspection-pump test specifications  
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1000  
 TD travel mm: 4.60...5.40  
 mm: (4.30...5.70)  
 Shutoff  
 electromagnet Volt: 24

3rd speed 1/min: 750  
 TD travel mm: 3.00...3.40  
           mm: (2.50...3.90)  
 Shutoff  
 electromagnet Volt: 24  
 4th speed 1/min: 500  
 TD travel mm: 1.20...2.00  
           mm: (0.90...2.30)  
 Shutoff  
 electromagnet Volt: 24  
  
 Supply-pump pressure characteristic:  
  
 1st speed 1/min: 500  
 Supply-pump  
 pressure bar: 2.30...2.90  
 Shutoff  
 electromagnet Volt: 24  
 2nd speed 1/min: 750  
 Supply-pump  
 pressure bar: 3.30...3.90  
 Shutoff  
 electromagnet Volt: 24  
 3rd speed 1/min: 1000  
 Supply-pump  
 pressure bar: 4.50...5.10  
 Shutoff  
 electromagnet Volt: 24  
  
 Overflow quantity at overflow valve:  
  
 1st speed 1/min: 500  
 Shutoff  
 electromagnet Volt: 24  
 Overflow : 41.70...83.40  
 quantity cm<sup>3</sup>/10s: (26.70...98.40)  
 2nd speed 1/min: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Overflow : 55.60...139.00  
 quantity cm<sup>3</sup>/10s: (40.60...154.00)  
  
 Delivery-quant. and breakaway char.:  
  
 2nd speed 1/min: 1120  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
                   1000s.: -  
 3rd speed 1/min: 1060  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 25.00...55.00  
                   1000s.: -  
 5th speed 1/min: 1040  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 53.00...59.00  
                   1000s.: (50.00...62.00)

9th speed 1/min: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 63.50...66.50  
                   1000s.: (62.00...68.00)  
 10th speed 1/min: 750  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 64.00...67.00  
                   1000s.: (62.00...69.00)  
 Shutoff  
 electromagnet Volt: 24  
 12th speed 1/min: 850  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 66.50...67.50  
                   1000s.: (64.00...70.00)  
 20th speed 1/min: 500  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 40.50...48.50  
                   1000s.: (38.50...50.50)  
  
 Mech. shutoff:  
  
 Electr. shutoff:  
  
 1st speed 1/min: 450  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 Shutoff  
 electromagnet volt: -  
  
 Idle delivery:  
  
 1st speed 1/min: 450  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 6.00...12.00  
                   1000s.: (4.00...14.00)  
 Dispersion cm<sup>3</sup>/: 5.5  
                   1000s.: (7.0)  
 2nd speed 1/min: 500  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 0.00...4.00  
                   1000s.: -  
  
 Automatic starting fuel delivery:  
  
 1st speed 1/min: 130  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 70.00...130.00  
                   1000s.: -  
 2nd speed 1/min: 240  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 5.00...35.00  
                   1000s.: -

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...120.00  
1000s.: -

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.0...5.4
MS	mm: 0.8...1.2
SVS max.	mm: 1.5
XK	mm: 18.8...20.8
XL	mm: 6.8...10,2

Remarks:

⋮

Overflow restriction 0.55 mm - Part No.  
..303

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS 5,9 K1  
Edition : 09.12.91  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/12F1000R369-3  
Type number : 0 460 426 197  
Customer Part-No. :

Customer-specific information  
Customer : CASE

Engine : 6 T 590  
Speed 1/min: 1000

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 42.00...48.00  
Electronically : 40.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.3  
(from BDC):  $\pm 0,02(0,04)$

Start of delivery block  
Piston stroke mm: 1.5  
mm:  $\pm 0,02(0,06)$

Outlet : 0

Injection-pump setting values  
Test specifications in parentheses

E02

## Timing-device travel

Speed 1/min: 750  
Setting value mm: 3.50...3.90  
Shutoff  
electromagnet Volt: 24

## Supply-pump pressure

Speed 1/min: 750  
Setting value bar: 3.60...4.20  
Shutoff  
electromagnet Volt: 24

## Full-load del. w/out charge press.:

Speed 1/min: 900  
Del. quantity cm<sup>3</sup>/  
1000S.: 73.0...74.0

Shutoff  
electromagnet Volt: 24  
Dispersion cm<sup>3</sup>/: 4.0  
1000S.: (4.5)

## Low-idle speed regulation

Speed 1/min: 500  
Del. quantity cm<sup>3</sup>/  
1000S.: 4.00...10.00

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 5.5  
1000S.: (7.0)

## Full-load speed regulation

Speed 1/min: 1045  
Del. quantity cm<sup>3</sup>/  
1000S.: 60.00...66.00

Shutoff  
electromagnet Volt: 24

## Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 70.00...130.00  
mind 1000S.: 70.00  
Shutoff  
electromagnet Volt: 24

## Inspection-pump test specifications Test specifications in parentheses

## Timing-device characteristic:

2nd speed 1/min: 1000  
TD travel mm: 4.80...5.60  
mm: (4.50...5.90)

Shutoff  
electromagnet Volt: 24



3rd speed 1/min: 750  
TD travel mm: 3.50...3.90  
mm: (3.00...4.40)

Shutoff  
electromagnet Volt: 24

4th speed 1/min: 500  
TD travel mm: 1.40...2.20  
mm: (1.10...2.50)

Shutoff  
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump pressure bar: 2.60...3.20

Shutoff  
electromagnet Volt: 24

2nd speed 1/min: 750  
Supply-pump pressure bar: 3.60...4.20

Shutoff  
electromagnet Volt: 24

3rd speed 1/min: 1000  
Supply-pump pressure bar: 4.60...5.20

Shutoff  
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Shutoff  
electromagnet Volt: 24  
Overflow quantity cm<sup>3</sup>/10s: 41.70...83.40  
(26.70...98.40)

2nd speed 1/min: 1000  
Shutoff  
electromagnet Volt: 24  
Overflow quantity cm<sup>3</sup>/10s: 55.60...139.00  
(40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1170  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -

3rd speed 1/min: 1100  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 25.00...45.00  
1000S.: -

5th speed 1/min: 1045  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...66.00  
1000S.: (57.00...69.00)

9th speed 1/min: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 70.50...73.50  
1000S.: (69.00...75.00)

10th speed 1/min: 750  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 74.50...77.50  
1000S.: (72.50...79.50)

12th speed 1/min: 900  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 73.00...74.00  
1000S.: (70.50...76.5)

20th speed 1/min: 500  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 58.50...66.50  
1000S.: (56.50...68.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 500  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 500  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 4.00...10.00  
1000S.: (2.00...12.00)

Dispersion cm<sup>3</sup>/: 5.5  
1000S.: (7.0)

2nd speed 1/min: 540  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 80.00...140.00  
1000S.: -

2nd speed 1/min: 250  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 30.00...60.00  
1000S.: -

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 70.00...130.00

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.0...5.4
MS	mm: 0.8...1.2
SVS max.	mm: 1.2

Remarks:

⋮

Overflow restriction 0.55 mm - Part No.  
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN 2.0 P
Edition : 02.12.91
replaces : 18.07.89
Calibrating oil : ISO-4113
Injection pump : VE4/8F2300R317
Type number : 0 460 484 020
Customer Part-No. :

Customer-specific information
Customer : RNJR

Engine : F8Q - A06

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 4.10...4.50
AFB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 4.50...5.10
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 31.60...32.60
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 1.00...5.00
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2450
Del. quantity cm3/
1000S.: 23.00...29.00
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...70.00
mind 1000S.: 40.00
KSB/AFB
Valve Volt: -
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: 9.00...13.00

KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 TD-travel dif.measurement  
 correttore anticipo iniezione (SV)  
 1.Speed 1/min: 1250  
 TD-travel  
 difference mm: 0.30...0.50  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 SP press.-dif.measurement  
 pompa di mandata (FP)  
 1.Speed 1/min: 1250  
 Supply pump  
 pressure  
 difference bar: 0.20...0.60  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
  
 Inspection-pump test specifications  
 Test specifications in parentheses  
  
 Timing-device characteristic:  
  
 2nd speed 1/min: 2000  
 TD travel mm: 7.40...8.20  
 mm: (7.10...8.50)  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1250  
 TD travel mm: 4.10...4.50  
 mm: (3.60...5.00)  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 750  
 TD travel mm: 1.70...2.50  
 mm: (1.40...2.80)  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 8th speed 1/min: 500  
 TD travel mm: 1.90...4.30 B  
 mm: (1.90...4.30)  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 9th speed 1/min: 310  
 TD travel mm: 0.60...3.00 A  
 mm: (0.60...3.00)

KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
  
 Supply-pump pressure characteristic:  
  
 1st speed 1/min: 750  
 Supply-pump  
 pressure bar: 3.10...3.70  
 bar: (2.80...4.00)  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 2nd speed 1/min: 1250  
 Supply-pump  
 pressure bar: 4.50...5.10  
 bar: (4.20...5.40)  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 2000  
 Supply-pump  
 pressure bar: 6.40...7.00  
 bar: (6.10...7.30)  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
  
 Overflow quantity at overflow valve:  
  
 1st speed 1/min: 750  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 41.70...83.40  
 quantity cm<sup>3</sup>/10s: (26.70...98.40)  
 2nd speed 1/min: 2250  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 55.60...139.00  
 quantity cm<sup>3</sup>/10s: (40.60...153.00)  
  
 Delivery-quant. and breakaway char.:  
  
 2nd speed 1/min: 2950  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 0.00...5.00  
 1000S.: (0.00...5.00)  
 3rd speed 1/min: 2650

KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 7.00...15.00  
 1000S.: (6.00...16.00)  
 5th speed 1/min: 2450  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 23.00...29.00  
 1000S.: (22.00...30.00)  
 9th speed 1/min: 2250  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 31.20...33.20  
 1000S.: (30.70...33.70)  
 10th speed 1/min: 2000  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 30.60...32.60  
 1000S.: (20.10...33.10)  
 11th speed 1/min: 1625  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 29.70...32.70  
 1000S.: (28.90...33.50)  
 12th speed 1/min: 1250  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 31.60...32.60  
 1000S.: (30.80...33.40)  
 20th speed 1/min: 750  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 30.30...33.30  
 1000S.: (30.00...33.60)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 410  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet volt: -  
 KSB/AFB  
 valve Volt: -

E07

Damper set qty.:

LFG-setting:  
 solidale con carcassa:  
 Idle delivery:  
 1st speed 1/min: 410  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 6.50...10.50  
 1000S.: (4.50...12.50)

High Idle:

1st speed 1/mi: 500  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 7.00...11.00  
 1000S.: (5.00...13.00)

Residual:

1.Rotacao 1/min: 500  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 1.00...5.00  
 1000S.: (1.00...5.00)

Load-dependent start of delivery:  
 Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
 Inj.-qty. cm<sup>3</sup>/ : 9.00...13.00  
 difference 1000S.: (9.00...13.00)  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 2nd speed 1/min: 1250  
 Inj.-qty. cm<sup>3</sup>/: 2.00...8.00  
 difference 1000S.: (2.00...8.00)

TD-travel dif.measurement:  
 correttore anticipo iniezione (SV):  
 1st speed 1/min: 1250  
 TD-travel : 0.30...0.50  
 difference mm: (0.30...0.50)  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1250

TD-travel : 0.20...0.60  
difference mm: (0.10...0.70)  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1250  
Supply pump-  
pressure : 0.10...0.30  
difference bar: (0.10...0.30)  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
Supply pump-  
pressure : 0.20...0.60  
difference bar: (0.20...0.60)  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 210  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 45.00...75.00  
1000s.: (45.00...75.00)

2nd speed 1/min: 310  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 15.00...45.00  
1000s.: (15.00...45.00)

4th speed 1/min: 100  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 40.00...70.00  
1000s.: (40.00...70.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 3.2...3.4  
KF mm: 5.3...5.7  
MS mm: 1.1...1.5  
SVS max. mm: 1.8  
XK mm: 18.7...20.7  
XL mm: 11.2...14.6

Remarks:

\* Unscrew KSB ball valve 2 mm  
:

A = KSB adjustment point

B = KSB curve point

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN 2.0 P1  
Edition : 03.12.91  
replaces : 17.07.89  
Calibrating oil : ISO-4113

Injection pump : VE4/8F2300R317-2  
Type number : 0 460 484 030  
Customer Part-No. :

Customer-specific information  
Customer : RNUR

Engine : F8Q - 706

TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250  
Setting value mm: 4.10...4.50  
AFB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

EO9

Speed 1/min: 1250  
Setting value bar: 4.50...5.10  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250  
Del. quantity cm3/  
1000S.: 31.00...32.00

KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: -  
Dispersion cm3/: 2.5  
1000S.: (3.0)

11

Residual-Delivery Setting

Speed 1/min: 500  
Del. quantity cm3/  
1000S.: 1.00...5.00

KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2450  
Del. quantity cm3/  
1000S.: 22.00...28.00

KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm3/: 40.00...70.00  
mind 1000S.: 40.00

KSB/AFB  
Valve Volt: -  
Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1250  
Charge press hPa: 12  
Inj.-qty. cm3/  
difference 1000S.: 9.00...13.00  
KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 1250

TD-travel  
difference mm: 0.30...0.50

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
SP press.-dif.measurement  
pompa di mandata (FP)  
1.Speed 1/min: 1250

Supply pump  
pressure  
difference bar: 0.10...0.30

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000  
TD travel mm: 7.40...8.20  
mm: (7.10...8.50)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
TD travel mm: 4.10...4.50  
mm: (3.60...5.00)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 750  
TD travel mm: 1.70...2.50  
mm: (1.40...2.80)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
8th speed 1/min: 500  
TD travel mm: 1.90...4.30 B  
mm: (1.90...4.30)

KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12  
9th speed 1/min: 310  
TD travel mm: 0.60...3.00 A  
mm: (0.60...3.00)

KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Supply-pump  
pressure bar: 3.10...3.70  
bar: (2.80...4.00)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
Supply-pump  
pressure bar: 4.50...5.10  
bar: (4.20...5.40)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 2000  
Supply-pump  
pressure bar: 6.40...7.00  
bar: (6.10...7.30)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 750  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.70...98.40)  
2nd speed 1/min: 2250

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...139.00  
quantity cm<sup>3</sup>/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2950  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...5.00  
1000S.: (0.00...5.00)

3rd speed 1/min: 2650  
KSB/AFB

valve Volt: -



Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 7.00...15.00  
1000S.: (6.00...16.00)  
5th speed 1/min: 2450  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 22.00...28.00  
1000S.: (21.00...29.00)  
9th speed 1/min: 2250  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 31.50...33.50  
1000S.: (30.20...34.80)  
10th speed 1/min: 2000  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 30.30...32.30  
1000S.: (29.00...33.60)  
11th speed 1/min: 1625  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 29.70...32.70  
1000S.: (28.90...33.50)  
12th speed 1/min: 1250  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 31.00...32.00  
1000S.: (29.20...33.80)  
20th speed 1/min: 750  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 30.10...33.10  
1000S.: (29.30...33.90)

Damper set qty.:

E11

LFG-setting:  
solidale con carcassa:  
Idle delivery:  
1st speed 1/min: 410  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 6.50...10.50  
1000S.: (4.50...12.50)

High Idle:

1st speed 1/mi: 500  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 7.00...11.00  
1000S.: (5.00...13.00)

Residual:

1.Rotacao 1/min: 500  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 1.00...5.00  
1000S.: (1.00...5.00)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
Inj.-qty. cm3/ : 7.70...9.70  
difference 1000S.: (7.70...9.70)  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
Inj.-qty. cm3/: 9.00...13.00  
difference 1000S.: (9.00...13.00)  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
5th speed 1/min: 1250  
Inj.-qty. cm3/: 2.00...8.00  
difference 1000S.: (2.00...8.00)  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):

1st speed 1/min: 1250  
TD-travel : 0.30...0.50  
difference mm: (0.30...0.50)  
KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
TD-travel : 0.20...0.60  
difference mm: (0.10...0.70)  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:

pompa di mandata (FP):  
1st speed 1/min: 1250  
Supply pump-  
pressure : 0.10...0.30  
difference bar: (0.10...0.30)  
KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
Supply pump-  
pressure : 0.20...0.60  
difference bar: (0.20...0.60)  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 210  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 45.00...75.00  
1000S.: (45.00...75.00)

2nd speed 1/min: 310  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 15.00...45.00  
1000S.: (15.00...45.00)

4th speed 1/min: 100  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 40.00...70.00  
1000S.: (40.00...70.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 5.3...5.7
MS	mm: 1.1...1.5
SVS max.	mm: 1.8
XK	mm: 18.7...20.7
XL	mm: 11.2...14.6

Remarks:

\* Unscrew KSB ball valve 2 mm

A = KSB adjustment point

B = KSB curve point

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW 1.9 C4
Edition : 03.12.91
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/8F2100R357
Type number : 0 460 484 031
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 028.A 1.9L.

Power KW: 45

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.10...3.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 5.70...6.30
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 35.50...36.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm3/
1000S.: 2.00...3.00
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2400
Del. quantity cm3/
1000S.: 10.00...14.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 35.00...85.00
mind 1000S.: 35.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Inj.-qty. cm3/
difference 1000S.: 5.00...11.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
TD-travel
difference mm: 0.30...0.50
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1250

Supply pump  
pressure  
difference bar: 0.50...0.90  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1700  
TD travel mm: 5.00...5.80  
mm: (4.70...6.10)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
TD travel mm: 3.10...3.50  
mm: (2.60...4.00)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 750  
TD travel mm: 1.00...1.80  
mm: (0.70...2.10)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1850  
Supply-pump  
pressure bar: 7.10...7.70  
bar: (6.90...7.90)

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250

Supply-pump  
pressure bar: 5.70...6.30  
bar: (5.50...6.50)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 750  
Supply-pump  
pressure bar: 4.50...5.10  
bar: (4.30...5.30)

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 750  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.80...98.30)

2nd speed 1/min: 1850  
Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...138.90  
quantity cm<sup>3</sup>/10s: (40.70...153.90)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 2650  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...6.00  
1000S.: (0.00...6.00)

5th speed 1/min: 2400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 10.00...14.00  
1000S.: (8.00...16.00)

8th speed 1/min: 2250  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 18.00...28.00  
1000S.: (17.00...29.00)

9th speed 1/min: 1850  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 32.00...34.00  
1000S.: (30.80...35.20)

10th speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 29.50...34.50  
1000S.: (27.00...37.00)

12th speed 1/min: 1250  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.50...36.50  
1000S.: (33.80...38.20)

20th speed 1/min: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 30.50...33.50  
1000S.: (29.00...35.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Damper set qty.:

LFG-setting:  
solidale con carcassa:  
Idle delivery:

1st speed 1/min: 425  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 7.00...9.00  
1000S.: (4.00...12.00)

High Idle:

1st speed 1/mi: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 7.00...9.00  
1000S.: (4.00...12.00)

Residual:

1. Rotacao 1/min: 550  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 2.00...3.00  
1000S.: (0.50...4.50)  
2nd speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 2.50...4.50  
1000S.: (1.00...6.00)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

3rd speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/: 5.00...11.00  
difference 1000S.: (4.00...12.00)  
Shutoff  
electromagnet Volt: 12  
5th speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/: 0.00...3.00  
difference 1000S.: (0.00...3.00)  
Shutoff  
electromagnet Volt: 12

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):

1st speed 1/min: 1250  
TD-travel : 0.30...0.50  
difference mm: (0.30...0.50)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
TD-travel : 0.70...1.10  
difference mm: (0.40...1.40)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
Supply pump-  
pressure : 0.50...0.90  
difference bar: (0.30...1.10)  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 180

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.00...85.00  
1000S.: (35.00...85.00)

2nd speed 1/min: 380  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 18.00...38.00  
1000S.: (18.00...38.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.00...85.00  
1000S.: (35.00...85.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 5.1...5.5
MS	mm: 1.2...1.5
XK	mm: 17.0...19.0
XL	mm: 10.6...14.0

Remarks:

:  
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN 2.0 P9
Edition : 03.12.91
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/8F2300R317-1
Type number : 0 460 484 032
Customer Part-No. :

Customer-specific information
Customer : RNUR

Engine : F8Q - 706 CA

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 4.10...4.50
AFB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 4.50...5.10
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 31.00...32.00

KSB/AFB 11
valve Volt: -
Shutoff
electromagnet Volt: 12
Dispersion cm3/ 2.5
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 1.00...5.00

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2450
Del. quantity cm3/
1000S.: 22.00...28.00

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/ 40.00...70.00
mind 1000S.: 40.00

KSB/AFB
Valve Volt: -
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: 9.00...13.00

KSB/AFB
valve Volt: -

Shutoff  
 electromagnet Volt: 12  
 TD-travel dif.measurement  
 correttore anticipo iniezione (SV)  
 1.Speed 1/min: 1250  
 TD-travel  
 difference mm: 0.30...0.50  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 SP press.-dif.measurement  
 pompa di mandata (FP)  
 1.Speed 1/min: 1250  
 Supply pump  
 pressure  
 difference bar: 0.10...0.30  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12

Inspection-pump test specifications  
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000  
 TD travel mm: 7.40...8.20  
 mm: (7.10...8.50)

KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1250  
 TD travel mm: 4.10...4.50  
 mm: (3.60...5.00)

KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 750  
 TD travel mm: 1.70...2.50  
 mm: (1.40...2.80)

KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 8th speed 1/min: 500  
 TD travel mm: 1.80...4.30 B  
 mm: (1.80...4.30)

KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 9th speed 1/min: 310  
 TD travel mm: 0.60...3.00 A  
 mm: (0.60...3.00)

KSB/AFB  
 valve Volt: 12

Shutoff  
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750  
 Supply-pump  
 pressure bar: 3.10...3.70  
 bar: (2.80...4.00)

KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 2nd speed 1/min: 1250  
 Supply-pump  
 pressure bar: 4.50...5.10  
 bar: (4.20...5.40)

KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 2000  
 Supply-pump  
 pressure bar: 6.40...7.00  
 bar: (6.10...7.30)

KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 750  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 41.70...83.40  
 quantity cm<sup>3</sup>/10s: (26.70...98.40)  
 2nd speed 1/min: 2250  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 55.60...139.00  
 quantity cm<sup>3</sup>/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2950  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 0.00...5.00  
 1000s.: (0.00...5.00)  
 3rd speed 1/min: 2650  
 KSB/AFB  
 valve Volt: -

Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 7.00...15.00  
                   1000S.: (6.00...16.00)  
 5th speed 1/min: 2450  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 22.00...28.00  
                   1000S.: (21.00...29.00)  
 9th speed 1/min: 2250  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 31.50...33.50  
                   1000S.: (30.20...34.80)  
 10th speed 1/min: 2000  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 30.30...32.30  
                   1000S.: (29.00...33.60)  
 11th speed 1/min: 1625  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 29.70...32.70  
                   1000S.: (28.90...33.50)  
 12th speed 1/min: 1250  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 31.00...32.00  
                   1000S.: (29.20...33.50)  
 20th speed 1/min: 750  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 30.10...33.10  
                   1000S.: (29.30...33.90)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 410  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
                   1000S.: (0.00...3.00)

Shutoff  
 electromagnet volt: -  
 KSB/AFB  
 valve Volt: -

Damper set qty.:

E18

LFG-setting:  
 solidale con carcassa:  
 Idle delivery:

1st speed 1/min: 410  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 6.50...10.50  
                   1000S.: (4.50...12.50)

High Idle:

1st speed 1/mi: 500  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 7.00...11.00  
                   1000S.: (5.00...13.00)

Residual:

1.Rotacao 1/min: 500  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 1.00...5.00  
                   1000S.: (1.00...5.00)

Load-dependent start of delivery:  
 Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
 Inj.-qty. cm<sup>3</sup>/: 7.70...9.70  
 difference 1000S.: (7.70...9.70)  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1250  
 Inj.-qty. cm<sup>3</sup>/: 9.00...13.00  
 difference 1000S.: (9.00...13.00)  
 KSB/AFB

valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 5th speed 1/min: 1250  
 Inj.-qty. cm<sup>3</sup>/: 2.00...8.00  
 difference 1000S.: (2.00...8.00)  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12

TD-travel dif.measurement:  
 correttore anticipo iniezione (SV):



1st speed 1/min: 1250  
TD-travel : 0.30...0.50  
difference mm: (0.30...0.50)

KSB/AFB  
valve Volt: -  
Shutoff

electromagnet Volt: 12  
3rd speed 1/min: 1250  
TD-travel : 0.10...0.70  
difference mm: (0.10...0.70)

KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):

1st speed 1/min: 1250  
Supply pump-  
pressure : 0.10...0.30  
difference bar: (0.10...0.30)

KSB/AFB  
valve Volt: -  
Shutoff

electromagnet Volt: 12  
3rd speed 1/min: 1250  
Supply pump-  
pressure : 0.20...0.60  
difference bar: (0.20...0.60)

KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 210  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 45.00...75.00  
1000S.: (45.00...75.00)

2nd speed 1/min: 310  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 15.00...45.00  
1000S.: (15.00...45.00)

4th speed 1/min: 100  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 40.00...70.00  
1000S.: (40.00...70.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.2...3.4  
KF mm: 5.3...5.7  
MS mm: 1.1...1.5  
SVS max. mm: 1.8

Remarks:

\* Unscrew KSB ball valve 2 mm

A = KSB adjustment point  
B = KSB curve point

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW 1.4 A  
 Edition : 02.12.91  
 replaces : 08.11.89  
 Calibrating oil : ISO-4113  
 Injection pump : VE4/8F2450L331-2  
 Type number : 0 460 484 033  
 Customer Part-No. :

Customer-specific information  
 Customer : VW

Engine : 031.2  
 Power KW: 35.0

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
 return temp. °C  
 with thermometer : 40.00...48.00  
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
 assembly : 1 688 901 000

Opening  
 Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
 x Wall thickness : 2.00  
 x Length mm: 840

Start of delivery  
 Prestroke mm: -  
 (from BDC): -

Injection-pump setting values  
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250  
 Setting value mm: 2.30...2.70  
 Shutoff  
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250  
 Setting value bar: 4.90...5.50  
 Shutoff  
 electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1500  
 Del. quantity cm3/  
 1000S.: 24.80...25.80  
 Shutoff  
 electromagnet Volt: 12  
 Dispersion cm3/: 2.0  
 1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 575  
 Del. quantity cm3/  
 1000S.: 2.50...3.50  
 Shutoff  
 electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2700  
 Del. quantity cm3/  
 1000S.: 12.00...16.00  
 Shutoff  
 electromagnet Volt: 12

Start:

Speed 1/min: 100  
 Del. quantity cm3/: 32.00...82.00  
 mind 1000S.: 32.00  
 Shutoff  
 electromagnet Volt: 12

Load-dependent start of delivery:  
 Inj.-qty.dif.measurement:

Speed 1/min: 1250  
 Inj.-qty. cm3/  
 difference 1000S.: 5.50...11.50  
 Shutoff  
 electromagnet Volt: 12  
 TD-travel dif.measurement  
 correttore anticipo iniezione (SV)  
 1.Speed 1/min: 1250  
 TD-travel  
 difference mm: 0.60...0.80  
 Shutoff  
 electromagnet Volt: 12  
 SP press.-dif.measurement  
 pompa di mandata (FP)  
 1.Speed 1/min: 1250

Supply pump  
pressure  
difference bar: 0.80... 1.20  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1250  
TD travel mm: 2.30...2.70  
mm: (1.80...3.20)

electromagnet Volt: 12  
2nd speed 1/min: 2250  
TD travel mm: 6.70...7.50  
mm: (6.40...7.80)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 1000  
TD travel mm: 1.10...1.90  
mm: (0.80...2.20)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800  
Supply-pump  
pressure bar: 3.60...4.20  
bar: (3.40...4.40)

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
Supply-pump  
pressure bar: 4.90...5.50  
bar: (4.70...5.70)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 2250  
Supply-pump  
pressure bar: 7.70...8.30  
bar: (7.50...8.50)

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 800  
Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 41.70...83.40  
(26.80...98.30)

2nd speed 1/min: 2250  
Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 55.60...138.00  
(40.70...153.90)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 2975  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...6.00  
1000S.: (0.00...6.00)

5th speed 1/min: 2700  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 12.00...16.00  
1000S.: (10.00...18.00)

8th speed 1/min: 2575  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 16.50...26.50  
1000S.: (15.50...27.50)

9th speed 1/min: 2250  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 23.00...25.00  
1000S.: (21.80...26.20)

10th speed 1/min: 600  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 17.50...22.50  
1000S.: (15.00...25.00)

12th speed 1/min: 1500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 24.80...25.80  
1000S.: (23.10...27.50)

20th speed 1/min: 800  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 21.00...24.00  
1000S.: (19.50...25.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Damper set qty.:

LFG-setting:  
solidale con carcassa:  
Idle delivery:

1st speed 1/min: 425  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 9.50...11.50  
1000S.: (6.50...14.50)

2nd speed 1/min: 450  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 5.50...8.50  
1000S.: (3.00...11.00)  
Dispersion cm<sup>3</sup>/: 2.0  
1000S.: (3.0)

Residual:

1. Rotacao 1/min: 575  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 2.50...3.50  
1000S.: (1.00...5.00)  
2nd speed 1/min: 525  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 3.00...5.00  
1000S.: (1.50...6.50)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/ : 5.50...11.50  
difference 1000S.: (4.50...12.50)  
Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/ : 0.00...3.00  
difference 1000S.: (0.00...3.00)  
Shutoff  
electromagnet Volt: 12

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1250  
TD-travel : 0.60...0.80  
difference mm: (0.60...0.80)  
Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
TD-travel : 1.00...1.40  
difference mm: (0.70...1.70)  
Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1250  
Supply pump-  
pressure : 0.80...1.20  
difference bar: (0.60...1.40)  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 200

E22

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 30.00...80.00  
1000S.: (30.00...80.00)

2nd speed 1/min: 400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 10.00...30.00  
1000S.: (10.00...30.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 32.00...82.00  
1000S.: (32.00...82.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.2...3.4  
KF mm: 5.6...6.0  
MS mm: 1.2...1.6

Remarks:

Overflow restriction 0.55 mm - Part No.  
..303

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1.9 C2  
Edition : 14.10.91  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/8F2000R401-1  
Type number : 0 460 484 037  
Customer Part-No. :

Customer-specific information  
Customer : VW

Engine : 028.B 1.9L.

Power KW: 45

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery

Indicator setting  
Piston stroke mm: 1.0  
Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500  
Setting value mm: 4.40...4.80  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500  
Setting value bar: 6.10...6.70  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500  
Del. quantity cm<sup>3</sup>/  
1000S.: 34.30...35.30  
Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/: 2.0  
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 430  
Del. quantity cm<sup>3</sup>/  
1000S.: 6.00...10.00  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 2.0  
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2130  
Del. quantity cm<sup>3</sup>/  
1000S.: 10.00...14.00  
Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 35.00...55.00  
mind 1000S.: 35.00  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1900  
TD travel mm: 5.90...6.70  
mm: (5.60...7.00)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1500  
TD travel mm: 4.40...4.80  
mm: (3.90...5.30)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 750

TD travel mm: 1.60...2.40  
mm: (1.30...2.70)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump  
pressure bar: 3.70...4.30  
bar: (3.50...4.50)

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1500  
Supply-pump  
pressure bar: 6.10...6.70  
bar: (5.90...6.90)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1900  
Supply-pump  
pressure bar: 7.00...7.60  
bar: (6.80...7.80)

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.80...98.30)

2nd speed 1/min: 1900  
Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...138.90  
quantity cm<sup>3</sup>/10s: (40.70...153.90)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2180  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...6.00  
1000S.: (0.00...6.00)

4th speed 1/min: 2150  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...12.00  
1000S.: (0.00...12.00)

5th speed 1/min: 2130  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 10.00...14.00  
1000S.: (1.00...23.00)

6th speed 1/min: 2110  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 17.00...29.00  
1000S.: (12.00...34.00)

9th speed 1/min: 1900  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 31.70...33.70  
1000S.: (30.50...34.90)

12th speed 1/min: 1500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 34.50...35.50  
1000S.: (32.80...37.20)

20th speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 25.20...28.20  
1000S.: (23.70...29.70)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 430  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 430  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 6.00...10.00  
1000S.: (4.00...12.00)

Dispersion cm<sup>3</sup>/: 2.0  
1000S.: (3.0)

2nd speed 1/min: 550  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...4.00  
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 180  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 30.00...64.00  
1000S.: (30.00...64.00)

2nd speed 1/min: 380  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 10.00...30.00  
1000S.: (10.00...30.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12

Del. quantity cm3/: 35.00...55.00  
1000S.: (35.00...55.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 3.2...3.4

KF mm: 5.2...5.6

MS mm: 1.1...1.5

XK mm: 17.0...19.0

XL mm: 13.1...16.5

Remarks:

:  
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN 2.0 P10
Edition : 04.12.91
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/8F2300R317-4
Type number : D 460 484 043
Customer Part-No. :

Customer-specific information
Customer : RNUR

Engine : F8Q - 706 CA

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 4.10...4.50
AFB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 4.50...5.10
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 31.00...32.00

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

11

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 1.00...5.00

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2450
Del. quantity cm3/
1000S.: 23.00...29.00

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...70.00
mind 1000S.: 40.00

KSB/AFB
Valve Volt: -
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: 9.00...13.00
KSB/AFB
valve Volt: -



Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 1250

TD-travel  
difference mm: 0.30...0.50  
KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
SP press.-dif.measurement  
pompa di mandata (FP)  
1.Speed 1/min: 1250

Supply pump  
pressure  
difference bar: 0.20...0.60  
KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000  
TD travel mm: 7.40...8.20  
mm: (7.10...8.50)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
TD travel mm: 4.10...4.50  
mm: (3.60...5.00)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 750  
TD travel mm: 1.70...2.50  
mm: (1.40...2.80)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
8th speed 1/min: 500  
TD travel mm: 1.90...4.30 B  
mm: (1.90...4.30)

KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12  
9th speed 1/min: 310  
TD travel mm: 0.60...3.00 A  
mm: (0.60...3.00)

KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Supply-pump  
pressure bar: 3.10...3.70  
bar: (2.80...4.00)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
Supply-pump  
pressure bar: 4.50...5.10  
bar: (4.20...5.40)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 2000  
Supply-pump  
pressure bar: 6.40...7.00  
bar: (6.10...7.30)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 750  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.70...98.40)  
2nd speed 1/min: 2250

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...139.00  
quantity cm<sup>3</sup>/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2950

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...5.00  
1000s.: (0.00...5.00)

3rd speed 1/min: 2650

KSB/AFB  
valve Volt: -

Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 7.00...15.00  
 1000S.: (6.00...16.00)  
 5th speed 1/min: 2450  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 23.00...29.00  
 1000S.: (22.00...30.00)  
 9th speed 1/min: 2250  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 31.50...33.50  
 1000S.: (30.20...34.80)  
 10th speed 1/min: 2000  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 30.30...32.30  
 1000S.: (29.00...33.60)  
 11th speed 1/min: 1625  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 29.70...32.70  
 1000S.: (28.90...33.50)  
 12th speed 1/min: 1250  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 31.00...32.00  
 1000S.: (29.20...33.80)  
 20th speed 1/min: 750  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 30.10...33.10  
 1000S.: (29.30...33.90)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 410  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)

Shutoff  
 electromagnet volt: -  
 KSB/AFB  
 valve Volt: -

Damper set qty.:

LFG-setting:  
 solidale con carcassa:  
 Idle delivery:  
 1st speed 1/min: 410  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 6.50...10.50  
 1000S.: (4.50...12.50)

High Idle:

1st speed 1/mi: 500  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 7.00...11.00  
 1000S.: (5.00...13.00)

Residual:

1.Rotacao 1/min: 500  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 1.00...5.00  
 1000S.: (1.00...5.00)

Load-dependent start of delivery:  
 Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
 Inj.-qty. cm<sup>3</sup>/ : 7.70...9.70  
 difference 1000S.: (7.70...9.70)  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1250  
 Inj.-qty. cm<sup>3</sup>/: 9.00...13.00  
 difference 1000S.: (9.00...13.00)  
 KSB/AFB  
 valve Volt: -

Shutoff  
 electromagnet Volt: 12  
 5th speed 1/min: 1250  
 Inj.-qty. cm<sup>3</sup>/: 2.00...8.00  
 difference 1000S.: (2.00...8.00)  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12

TD-travel dif.measurement:  
 correttore anticipo iniezione (SV):

1st speed 1/min: 1250  
TD-travel : 0.30...0.50  
difference mm: (0.30...0.50)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12

3rd speed 1/min: 1250  
TD-travel : 0.20...0.60  
difference mm: (0.10...0.70)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:

pompa di mandata (FP):

1st speed 1/min: 1250

Supply pump-  
pressure : 0.10...0.30  
difference bar: (0.10...0.30)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12

3rd speed 1/min: 1250

Supply pump-  
pressure : 0.20...0.60  
difference bar: (0.20...0.60)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 210

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 45.00...75.00  
1000S.: (45.00...75.00)

2nd speed 1/min: 310

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 15.00...45.00  
1000S.: (15.00...45.00)

4th speed 1/min: 100

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 40.00...70.00  
1000S.: (40.00...70.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 3.2...3.4

KF mm: 5.3...5.7

MS mm: 1.1...1.5

SVS max. mm: 1.8

Remarks:

\* Unscrew KSB ball valve 2 mm

A = KSB adjustment point

B = KSB curve point

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN 2.0 P11
Edition : 04.12.91
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/8F2300R317-5
Type number : 0 460 484 044
Customer Part-No. :

Customer-specific information
Customer : RNR

Engine : F8Q - 732

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 4.10...4.50
AFB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 4.50...5.10
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 31.00...32.00

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

11

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 1.00...5.00

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2450
Del. quantity cm3/
1000S.: 23.00...29.00

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...70.00
mind 1000S.: 40.00

KSB/AFB
Valve Volt: -
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: 9.00...13.00

KSB/AFB
valve Volt: -

Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 1250

TD-travel  
difference mm: 0.30...0.50

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
SP press.-dif.measurement  
pompa di mandata (FP)  
1.Speed 1/min: 1250

Supply pump  
pressure  
difference bar: 0.20...0.60

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000  
TD travel mm: 7.40...8.20  
mm: (7.10...8.50)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
TD travel mm: 4.10...4.50  
mm: (3.60...5.00)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 750  
TD travel mm: 1.70...2.50  
mm: (1.40...2.80)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
8th speed 1/min: 500  
TD travel mm: 1.90...4.30 B  
mm: (1.90...4.30)

KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12  
9th speed 1/min: 310  
TD travel mm: 0.60...3.00 A  
mm: (0.60...3.00)

KSB/AFB  
valve Volt: 12

FQ3

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Supply-pump  
pressure bar: 3.10...3.70  
bar: (2.80...4.00)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
Supply-pump  
pressure bar: 4.50...5.10  
bar: (4.20...5.40)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 2000  
Supply-pump  
pressure bar: 6.40...7.00  
bar: (6.10...7.30)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 750  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.70...98.40)  
2nd speed 1/min: 2250

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...139.00  
quantity cm<sup>3</sup>/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2950

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>: 0.00...5.00  
1000s.: (0.00...5.00)

3rd speed 1/min: 2650

KSB/AFB  
valve Volt: -

Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 7.00...15.00  
 1000S.: (6.00...16.00)  
 5th speed 1/min: 2450  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 23.00...29.00  
 1000S.: (22.00...30.00)  
 9th speed 1/min: 2250  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 31.50...33.50  
 1000S.: (30.20...34.80)  
 10th speed 1/min: 2000  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 30.30...32.30  
 1000S.: (29.00...33.60)  
 11th speed 1/min: 1625  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 29.70...32.70  
 1000S.: (28.90...33.50)  
 12th speed 1/min: 1250  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 31.00...32.00  
 1000S.: (29.20...33.80)  
 20th speed 1/min: 750  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 30.10...33.10  
 1000S.: (29.30...33.90)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 410  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)

Shutoff  
 electromagnet volt: -  
 KSB/AFB  
 valve Volt: -

Damper set qty.:

F04

LFG-setting:  
 solidale con carcassa:  
 Idle delivery:

1st speed 1/min: 410  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 6.50...10.50  
 1000S.: (4.50...12.50)

High Idle:

1st speed 1/mi: 500  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 7.00...11.00  
 1000S.: (5.00...13.00)

Residual:

1.Rotacao 1/min: 500  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 1.00...5.00  
 1000S.: (1.00...5.00)

Load-dependent start of delivery:  
 Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
 Inj.-qty. cm<sup>3</sup>/: 7.70...9.70  
 difference 1000S.: (7.70...9.70)  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1250  
 Inj.-qty. cm<sup>3</sup>/: 9.00...13.00  
 difference 1000S.: (9.00...13.00)  
 KSB/AFB

valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 5th speed 1/min: 1250  
 Inj.-qty. cm<sup>3</sup>/: 2.00...8.00  
 difference 1000S.: (2.00...8.00)  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12

TD-travel dif.measurement:  
 correttore anticipo iniezione (SV):

1st speed 1/min: 1250  
TD-travel : 0.30...0.50  
difference mm: (0.30...0.50)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12

3rd speed 1/min: 1250  
TD-travel : 0.20...0.60  
difference mm: (0.10...0.70)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):

1st speed 1/min: 1250

Supply pump-  
pressure : 0.10...0.30  
difference bar: (0.10...0.30)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12

3rd speed 1/min: 1250

Supply pump-  
pressure : 0.20...0.60  
difference bar: (0.20...0.60)

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 210

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 45.00...75.00  
1000S.: (45.00...75.00)

2nd speed 1/min: 310

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 15.00...45.00  
1000S.: (15.00...45.00)

4th speed 1/min: 100

KSB/AFB  
valve Volt: -

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 40.00...70.00  
1000S.: (40.00...70.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.2...3.4  
KF mm: 5.3...5.7  
MS mm: 1.1...1.5  
SVS max. mm: 1.8

Remarks:

\* Unscrew KSB ball valve 2 mm

A = KSB adjustment point  
B = KSB curve point

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 1,9 K2  
Edition : 06.12.91  
replaces : -  
Calibrating oil : ISO 4113

Injection pump : VE4/8F2300R464  
Type number : 0 460 484 052

Customer-specific information  
Customer : FIAT TIPO/TEMPRA

Engine : M 705

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500  
Setting value mm: 5,9...6,3  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500  
Setting value bar: 5,5...6,1

Shutoff  
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1500  
Del. quantity cm3/  
1000S.: 30,5...31,5

Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 2,5  
1000S.: -

Low-idle speed regulation

Speed 1/min: 390  
Del. quantity cm3/  
1000S.: 8,0...12,0

Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 2,5  
1000S.: -

Full-load speed regulation

Speed 1/min: 2500  
Del. quantity cm3/  
1000S.: 20,0...26,0

Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm3/: -  
mind 1000S.: 37,0

Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1500  
Inj.-qty. cm3/  
difference 1000S.: 6,0...12,0 \*

Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)

1.Speed 1/min: 1500  
TD-travel  
difference mm: 1,0...1,2 \*

Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:



1st speed 1/min: 800  
TD travel mm: 1,7...2,5  
mm: (1,4...2,8)  
electromagnet Volt: 12  
2nd speed 1/min: 1500  
TD travel mm: 5,9...6,3  
mm: (5,4...6,8)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 2000  
TD travel mm: 8,6...9,4  
mm: (8,3...9,7)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 2300  
TD travel mm: 9,4...10,2  
mm: (9,1...10,5)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump pressure bar: 2,9...3,5  
Shutoff

electromagnet Volt: 12  
2nd speed 1/min: 1500  
Supply-pump pressure bar: 5,5...6,1  
Shutoff

electromagnet Volt: 12  
3rd speed 1/min: 2300  
Supply-pump pressure bar: 7,7...8,3  
Shutoff

electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Shutoff  
electromagnet Volt: 12

Overflow quantity cm<sup>3</sup>/10s: 41,6...83,3  
(26,6...98,3)  
2nd speed 1/min: 2300  
Shutoff

electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 55,5...138,8  
(40,5...153,8)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2800  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/1000S.: 0,0...1,6  
2nd speed 1/min: 2650

F07

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 2,0...10,0  
-

3rd speed 1/min: 2500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 20,0...26,0  
(19,0...27,0)

4th speed 1/min: 2300  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 31,3...33,7  
(30,2...34,8)

5th speed 1/min: 2000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 30,8...33,2  
(29,7...34,3)

6th speed 1/min: 1500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 30,5...31,5  
(28,7...33,3)

7th speed 1/min: 600  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 31,5...34,5  
(30,0...36,0)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 390  
Del. quantity cm<sup>3</sup>/1000S.: 0,0...3,0  
-

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 390  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 8,0...12,0  
(5,0...15,0)

2nd speed 1/min: 400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 0,0...3,0  
-

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1500  
Inj.-qty. cm<sup>3</sup>/1000S.: 6,0...8,0 #  
difference 1000S.: -

Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1500  
Supply pump-  
pressure : 0,1...0,3  
difference bar: -  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 300  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 40,0...60,00  
1000S.: -

2nd speed 1/min: 400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 33,00...43,00  
1000S.: -

Shutoff electromagnet:

Cut-in  
min voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm: 3,2...3,4  
KF mm: 5,3...5,7  
MS mm: 1,3...1,7  
XK mm: 17,0...19,0  
XL mm: 10,5...13,9

Overflow restriction 0.55 mm - Part No.  
..303

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU 1.9 K11  
Edition : 04.12.91  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/8F2300R425-1  
Type number : 0 460 484 054  
Customer Part-No. :

Customer-specific information  
Customer : PSA

Engine : XUD9AL

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery

Indicator setting  
Piston stroke mm: 0.3  
Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250  
Setting value mm: 3.50...3.90  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250  
Setting value bar: 5.70...6.30  
Shutoff  
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250  
Del. quantity cm3/  
1000S.: 30.00...31.00

Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 2.0  
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500  
Del. quantity cm3/  
1000S.: 2.50...3.50

Shutoff  
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2650  
Del. quantity cm3/  
1000S.: 9.00...13.00

Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm3/: 42.00...68.00  
mind 1000S.: 42.00

Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1250  
Charge press hPa: 12  
Inj.-qty. cm3/  
difference 1000S.: 3.50...13.50

Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correctore anticipo iniezione (SV)

1.Speed 1/min: 1250  
TD-travel  
difference mm: 0.90...1.10

Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000  
TD travel mm: 6.70...7.50  
mm: (6.40...7.80)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
TD travel mm: 3.50...3.90  
mm: (3.00...4.40)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 800  
TD travel mm: 1.20...2.00  
mm: (0.90...2.30)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump  
pressure bar: 3.30...3.90  
bar: (3.10...4.10)

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
Supply-pump  
pressure bar: 5.70...6.30  
bar: (5.50...6.50)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 2200  
Supply-pump  
pressure bar: 8.20...8.80  
bar: (8.00...9.00)

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (27.80...97.30)  
2nd speed 1/min: 2200  
Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...138.90  
quantity cm<sup>3</sup>/10s: (41.70...152.90)  
Timing valve Volt: 12

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2900  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 0.00...6.00  
1000s.: (0.00...6.00)

5th speed 1/min: 2650  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 9.00...13.00  
1000s.: (7.00...15.00)

8th speed 1/min: 2500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 15.00...21.00  
1000s.: (13.00...23.00)

9th speed 1/min: 2200  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 32.50...34.50  
1000s.: (31.30...35.70)

12th speed 1/min: 1250  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 30.00...31.00  
1000s.: (28.30...32.70)

20th speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 30.00...33.00  
1000s.: (28.50...34.50)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 2200  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000s.: (0.00...3.00)

Shutoff  
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000s.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Damper set qty.:

LFG-setting:  
solidale con carcassa:  
Idle delivery:

1st speed 1/min: 375  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 6.50...8.50  
1000s.: (3.50...11.50)

High Idle:

1st speed 1/mi: 475

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 8.50...10.50  
1000S.: (5.50...13.50)

Residual:

1. Rotacao 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 2.50...3.50  
1000S.: (1.00...5.00)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

3rd speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/: 3.50...13.50  
difference 1000S.: (3.50...13.50)

Shutoff  
electromagnet Volt: 12  
5th speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/: 2.00...8.00  
difference 1000S.: (2.00...8.00)  
Shutoff  
electromagnet Volt: 12

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):

1st speed 1/min: 1250  
TD-travel : 0.90...1.10  
difference mm: (0.90...1.10)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
TD-travel : 2.00...3.00  
difference mm: (1.90...3.10)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250

Supply pump-  
pressure : 1.20...1.80  
difference bar: (1.10...1.90)

Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 225  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 37.00...71.00  
1000S.: (37.00...71.00)

2nd speed 1/min: 350  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 20.00...40.00  
1000S.: (20.00...40.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 42.00...68.00  
1000S.: (42.00...68.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.6...3.8  
KF mm: KOT  
MS mm: 1.2...1.6

Remarks:

:  
:  
:  
Overflow restriction 0.55 mm - Part No.  
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW 2.4 S11
Edition : 09.12.91
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE5/8F2200L336-3
Type number : 0 460 485 006
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 074.3 (2.4L.)

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Setting value mm: 3.40...3.80
AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Setting value bar: 5.70...6.30
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 35.50...36.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.0
1000S.: (2.0)

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm3/
1000S.: 4.00...5.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2525
Del. quantity cm3/
1000S.: 10.00...14.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 35.00...61.00
mind 1000S.: 35.00

KSB/AFB
Valve Volt: 12
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Inj.-qty. cm3/
difference 1000S.: 6.50...12.50
KSB/AFB
valve Volt: 12

Shutoff  
 electromagnet Volt: 12  
 TD-travel dif. measurement  
 correttore anticipo iniezione (SV)  
 1. Speed 1/min: 1500  
 TD-travel  
 difference mm: 0.60...0.80  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12

Inspection-pump test specifications  
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000  
 TD travel mm: 5.70...6.50  
 mm: (5.40...6.80)

KSB/AFB  
 valve Volt: 12

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1500  
 TD travel mm: 3.40...3.80  
 mm: (2.90...4.30)

KSB/AFB  
 valve Volt: 12

Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 1000  
 TD travel mm: 0.70...1.50  
 mm: (0.40...1.80)

KSB/AFB  
 valve Volt: 12

Shutoff  
 electromagnet Volt: 12  
 9th speed 1/min: 500  
 TD travel mm: 2.30...2.70  
 mm: (1.50...3.50)

KSB/AFB  
 valve Volt: -

Shutoff  
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1000  
 Supply-pump  
 pressure bar: 4.40...5.00  
 bar: (4.20...5.20)

KSB/AFB  
 valve Volt: 12

Shutoff  
 electromagnet Volt: 12  
 2nd speed 1/min: 1500  
 Supply-pump  
 pressure bar: 5.70...6.30  
 bar: (5.50...6.50)

KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 2200  
 Supply-pump  
 pressure bar: 7.60...8.20  
 bar: (7.40...8.40)

KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 500  
 Supply-pump  
 pressure bar: 4.70...5.90  
 bar: (4.50...6.10)

KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 400  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 41.70...83.40  
 quantity cm<sup>3</sup>/10s: (27.80...97.30)  
 2nd speed 1/min: 2200

KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 55.60...138.90  
 quantity cm<sup>3</sup>/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2700  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>: 0.00...6.00  
 1000s.: (0.00...6.00)  
 5th speed 1/min: 2525

KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>: 10.00...14.00  
 1000s.: (8.00...16.00)

8th speed 1/min: 2425  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 18.00...28.00  
1000S.: (17.00...29.00)

9th speed 1/min: 2200

KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 30.00...32.00  
1000S.: (28.80...33.20)

12th speed 1/min: 1250

KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 35.50...36.50  
1000S.: (33.80...38.20)

15th speed 1/min: 750

KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 32.00...35.00  
1000S.: (30.50...36.50)

20th speed 1/min: 400

KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 32.50...37.50  
1000S.: (30.00...40.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 415

Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

KSB/AFB  
valve Volt: 12

Damper set qty.:

LFG-setting:  
solidale con carcassa:  
Idle delivery:

1st speed 1/min: 415

KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 7.00...9.00  
1000S.: (4.00...12.00)

High Idle:

1st speed 1/mi: 450

F14

KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 7.50...8.50  
1000S.: (2.50...13.50)

Residual:

1.Rotacao 1/min: 550

KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 4.00...6.00  
1000S.: (3.00...7.00)

2nd speed 1/min: 500

KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 5.00...7.00  
1000S.: (3.50...8.50)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

3rd speed 1/min: 1500

Inj.-qty. cm<sup>3</sup>/: 6.50...12.50#  
difference 1000S.: (5.50...13.50)

KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12

5th speed 1/min: 1500

Inj.-qty. cm<sup>3</sup>/: 2.00...8.00\*  
difference 1000S.: (2.00...8.00)

KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):

1st speed 1/min: 1500

TD-travel : 0.60...0.80#  
difference mm: (0.60...0.80)

KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12

3rd speed 1/min: 1500

TD-travel : 0.70...1.10\*  
difference mm: (0.30...1.50)

KSB/AFB  
valve Volt: 12

3rd speed 1/min: 1500

Supply pump-  
pressure : 0.50...0.90\*  
difference bar: (0.30...1.10)



KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 180

KSB/AFB  
valve Volt: 12  
Timing valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.00...69.00  
1000S.: (35.00...69.00)

2nd speed 1/min: 380

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 20.00...40.00  
1000S.: (20.00...40.00)

4th speed 1/min: 100

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.00...61.00  
1000S.: (35.00...61.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 3.2...3.4  
KF mm: 5.5...5.9  
MS mm: 1.2...1.6

Remarks:

:  
Overflow restriction 0.55 mm - Part No.  
..303

On initial measurement, screw in  
residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out  
residual-quantity adjusting screw 2 mm.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN 2,0 01
Edition : 09.12.91
replaces : 01.02.89
Calibrating oil : ISO-4113
Injection pump : VE4/9F2350R309-1
Type number : 0 460 494 247
Customer Part-No. :

Customer-specific information
Customer : RNUR

Engine : J8S - 740

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1125
Setting value mm: 2.60...3.00
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1125

F16

Setting value bar: 4.20...4.80
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1125
Del. quantity cm3/
1000S.: 36.0...37.0

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2,5
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 6.0...10.0

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2,5
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 2.00...6.00

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2500
Del. quantity cm3/
1000S.: 20.00...26.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 52.00...92.00
mind 1000S.: 52.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1125
Inj.-qty. cm3/
difference 1000S.: 16.70...20.70 \*

Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1125

TD-travel  
difference mm: 0.90...1.10 \*  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000  
TD travel mm: 7.10...7.90  
mm: (6.80...8.20)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1125  
TD travel mm: 2.60...3.00  
mm: (2.10...3.50)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 800  
TD travel mm: 0.70...1.50  
mm: (0.40...1.80)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800  
Supply-pump  
pressure bar: 3.10...3.70

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1125  
Supply-pump  
pressure bar: 4.20...4.80

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 2000  
Supply-pump  
pressure bar: 6.50...7.10  
Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 800  
Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 41.70...83.40  
(26.70...98.40)  
2nd speed 1/min: 2250  
Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 55.60...139.00  
(40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...5.00  
1000S.: -

3rd speed 1/min: 2650  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 2.50...10.50  
1000S.: (1.50...11.50)

5th speed 1/min: 2500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 20.00...26.00  
1000S.: (19.00...27.00)

9th speed 1/min: 2250  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.30...37.30  
1000S.: (34.00...38.60)

10th speed 1/min: 1750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 34.50...36.50  
1000S.: (33.20...37.80)

12th speed 1/min: 1125  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 36.00...37.00  
1000S.: (34.20...38.80)

20th speed 1/min: 800  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 34.10...37.10  
1000S.: (33.30...37.90)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -

Shutoff  
electromagnet volt: -

Damper set qty.:

LFG-setting:  
solidale con carcassa:  
Idle delivery:

1st speed 1/min: 400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 6.00...10.00  
1000S.: (4.00...12.00)

High Idle:

1st speed 1/mi: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 8.50...12.50  
1000S.: (6.50...14.50)

Residual:

1. Rotacao 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 2.00...6.00  
1000S.: -

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1125  
Inj.-qty. cm<sup>3</sup>/ : 10.0...12.0 #  
difference 1000S.: -  
Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1125  
Inj.-qty. cm<sup>3</sup>/ : 2.00...8.00 #  
difference 1000S.: -

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1125  
TD-travel : 0.80...1.40 #  
difference mm: -  
Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1125  
Supply pump-  
pressure : 0.10...0.30 #  
difference bar: -  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 210  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 45.00...85.00  
1000S.: -

2nd speed 1/min: 310  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 25.00...45.00  
1000S.: -

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 52.00...92.00  
1000S.: -

Shutoff electromagnet:

Cut-in  
min voltage : 10,0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.2...3.4  
KF mm: 5.3...5.7  
MS mm: 1.3...1.7  
SVS max. mm: 2.3  
XK mm: 17.0...19.0  
XL mm: 8.7...12.1

Remarks:

:  
:  
:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN 2,0 02  
Edition : 09.12.91  
replaces : 01.02.89  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/9F2350R309-2  
Type number : 0 460 494 251  
Customer Part-No. :

Customer-specific information  
Customer : RNRJ

Engine : J8S - 740

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1125  
Setting value mm: 2.60...3.00  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1125

Setting value bar: 4.20...4.80  
Shutoff  
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1125  
Del. quantity cm<sup>3</sup>/  
1000S.: 36.0...37.0

Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/: 2,5  
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 400  
Del. quantity cm<sup>3</sup>/  
1000S.: 6.0...10.0

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 2,5  
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500  
Del. quantity cm<sup>3</sup>/  
1000S.: 2.00...6.00

Shutoff  
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2500  
Del. quantity cm<sup>3</sup>/  
1000S.: 20.00...26.00

Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 52.00...92.00  
mind 1000S.: 52.00  
Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1125  
Inj.-qty. cm<sup>3</sup>/  
difference 1000S.: 16.70...20.70 \*  
Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 1125

TD-travel  
difference mm: 0.90...1.10 \*  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000  
TD travel mm: 7.10...7.90  
mm: (6.80...8.20)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1125  
TD travel mm: 2.60...3.00  
mm: (2.10...3.50)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 800  
TD travel mm: 0.70...1.50  
mm: (0.40...1.80)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800  
Supply-pump  
pressure bar: 3.10...3.70

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1125  
Supply-pump  
pressure bar: 4.20...4.80

Shutoff  
electromagnet Volt: 12

3rd speed 1/min: 2000  
Supply-pump  
pressure bar: 6.50...7.10

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 800  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.70...98.40)

2nd speed 1/min: 2250  
Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...139.00  
quantity cm<sup>3</sup>/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 0.00...5.00

3rd speed 1/min: 2650  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 2.50...10.50  
(1.50...11.50)

5th speed 1/min: 2500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 20.00...26.00  
(19.00...27.00)

9th speed 1/min: 2250  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 35.30...37.30  
(34.00...38.60)

10th speed 1/min: 1750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 34.50...36.50  
(33.20...37.80)

12th speed 1/min: 1125  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 36.00...37.00  
(34.20...38.80)

20th speed 1/min: 800  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 34.10...37.10  
(33.30...37.90)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/1000S.: 0.00...3.00

Shutoff  
electromagnet volt: -

Damper set qty.:

LFG-setting:  
solidale con carcassa:  
Idle delivery:

1st speed 1/min: 400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 6.00...10.00  
(4.00...12.00)

High Idle:

1st speed 1/mi: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 8.50...12.50  
1000S.: (6.50...14.50)

Residual:

1. Rotacao 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 2.00...6.00  
1000S.: -

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1125  
Inj.-qty. cm<sup>3</sup>/ : 10.0...12.0 #  
difference 1000S.: -  
Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1125  
Inj.-qty. cm<sup>3</sup>/: 2.00...8.00 '  
difference 1000S.: -

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1125  
TD-travel : 0.80...1.40 '  
difference mm: -  
Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1125  
Supply pump-  
pressure : 0.10...0.30 #  
difference bar: -  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 210  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 45.00...85.00  
1000S.: -

2nd speed 1/min: 310  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 25.00...45.00  
1000S.: -

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 52.00...92.00  
1000S.: -

Shutoff electromagnet:

Cut-in  
min voltage : 10,0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 5.3...5.7
MS	mm: 1.3...1.7
SVS max.	mm: 2.3
XK	mm: 17.0...19.0
XL	mm: 8.7...12.1

Remarks:

:  
:  
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW 1.6 X17  
 Edition : 09.12.91  
 replaces : 18.02.91  
 Calibrating oil : ISO-4113  
 Injection pump : VE4/9F2250R328-5  
 Type number : 0 460 494 267  
 Customer Part-No. :

Customer-specific information  
 Customer : VW

Engine : 086T-1.6 LLK

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
 return temp. °C  
 with thermometer : 40.00...48.00  
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
 assembly : 1 688 901 000

Opening  
 Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
 x Wall thickness : 2.00  
 x Length mm: 840

Start of delivery  
 Prestroke mm: -  
 (from BDC): -

Injection-pump setting values  
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250  
 Charge press. hPa: 750  
 Setting value mm: 3.00...3.40  
 Shutoff  
 electromagnet Volt: 12

Supply-pump pressure

F22

Speed 1/min: 1250  
 Charge press hPa: 750  
 Setting value bar: 4.90...5.50  
 Shutoff  
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500  
 Charge press. hPa: 750  
 Del. quantity cm3/  
 1000S.: 42.00...43.00

Shutoff  
 electromagnet Volt: 12  
 Dispersion cm3/: 2.5  
 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700  
 Del. quantity cm3/  
 1000S.: 26.50...27.50

Shutoff  
 electromagnet Volt: 12

Residual-Delivery Setting

Speed 1/min: 615  
 Del. quantity cm3/  
 1000S.: 4.00...5.00

Shutoff  
 electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2525  
 Charge press hPa: 750  
 Del. quantity cm3/  
 1000S.: 13.00...17.00

Shutoff  
 electromagnet Volt: 12

Start:

Speed 1/min: 100  
 Del. quantity cm3/: 35.00...85.00  
 mind 1000S.: 35.00  
 Shutoff  
 electromagnet Volt: 12

Load-dependent start of delivery:  
 Inj.-qty.dif.measurement:

Speed 1/min: 1250  
 Charge press hPa: -  
 Inj.-qty. cm3/  
 difference 1000S.: 8.50...12.50  
 Shutoff  
 electromagnet Volt: 12



TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 1250  
Charge press hPa: -  
TD-travel  
difference mm: 0.60...0.80  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000  
Charge press hPa: 750  
TD travel mm: 6.40...7.20  
mm: (6.10...7.50)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
Charge press hPa: 750  
TD travel mm: 3.00...3.40  
mm: (2.50...3.90)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 1000  
Charge press hPa: 750  
TD travel mm: 1.70...2.50  
mm: (1.40...2.80)

Shutoff  
electromagnet Volt: 12  
5th speed 1/min: 2250  
Charge press. hPa: 750  
TD travel mm: 7.00...7.80  
mm: (6.70...8.10)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 700  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 3.30...3.90  
bar: (3.10...4.10)

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 4.90...5.50  
bar: (4.70...5.70)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 2250  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 7.70...8.30  
bar: (7.50...8.50)

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (27.80...97.30)  
2nd speed 1/min: 2250  
Charge press. hPa: 750  
Shutoff

electromagnet Volt: 12  
Overflow : 55.60...138.90  
quantity cm<sup>3</sup>/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 900\*  
Charge-air pressure-setting  
point hPa: 300  
LDA-stroke mm: 5.5  
Shutoff

electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 33.00...34.00  
1000S.: (30.50...36.50)

2nd speed 1/min: 2650  
Charge press. hPa: 750  
Shutoff

electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...6.00  
1000S.: (0.00...6.00)

5th speed 1/min: 2525  
Charge press. hPa: 750  
Shutoff

electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 13.00...17.00  
1000S.: (11.00...19.00)

8th speed 1/min: 2425  
Charge press. hPa: 750  
Shutoff

electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 26.50...36.50  
1000S.: (25.50...37.50)

9th speed 1/min: 2250  
Charge press. hPa: 750  
Shutoff

electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 36.30...38.30  
1000S.: (35.10...39.50)

12th speed 1/min: 1500  
Charge press. hPa: 750  
Shutoff

electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 42.00...43.00  
1000S.: (40.30...44.70)

16th speed 1/min: 500

Charge press. hPa: -  
Shutoff  
electromagnet volt: 12  
Del. quantity cm<sup>3</sup>/: 26.00...31.00  
1000H.: (23.50...33.50)  
18th speed 1/min: 700  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 26.50...27.50  
1000S.: (24.00...30.00)  
20th speed 1/min: 700  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 34.00...37.00  
1000S.: (32.50...38.50)  
21th speed 1/min: 400  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 29.50...35.50  
1000S.: (27.00...38.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 465  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Damper set qty.:

LFG-setting:  
solidale con carcassa:  
Idle delivery:

1st speed 1/min: 465  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 12.00...14.00  
1000S.: (7.50...18.50)

High Idle:

1st speed 1/mi: 515  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 12.00...14.00  
1000S.: (8.00...18.00)

Residual:

1. Rotacao 1/min: 615  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 4.00...5.00  
1000S.: (1.50...7.50)  
2nd speed 1/min: 565  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 5.50...7.50  
1000S.: (3.00...10.00)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

3rd speed 1/min: 1250  
Charge press. hPa: -  
Inj.-qty. cm<sup>3</sup>/: 8.50...12.50#  
difference 1000S.: (6.50...14.50)  
Shutoff  
electromagnet Volt: 12  
5th speed 1/min: 1250  
Charge press. hPa: -  
Inj.-qty. cm<sup>3</sup>/: 0.00...3.00'  
difference 1000S.: (0.00...3.00)

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
Charge press. hPa: -  
TD-travel : 0.60...0.80#  
difference mm: (0.60...0.80)  
Shutoff

electromagnet Volt: 12  
4th speed 1/min: 1250  
TD-travel : 0.90...1.30'  
difference mm: (0.60...1.60)  
Shutoff

electromagnet Volt: 12  
4th speed 1/min: 1250  
Charge press. hPa: -  
Supply pump-  
pressure : 0.60...1.00'  
difference bar: (0.40...1.20)  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 200  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.00...85.00  
1000S.: (35.00...85.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.00...85.00  
1000S.: (35.00...85.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: K1
KF	mm: 5.6...6.0
MS	mm: 1.2...1.6
SVS max.	mm: 3.1
LDA stroke	mm: 5.5
XK	mm: 17.0...19.0
XL	mm: 10.3...13.7

Remarks:

⋮

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Overflow restriction 0.55 mm - Part No. ..303

On initial measurement, screw in residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out residual-quantity adjusting screw 2 mm.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : NIS 2.0 B
Edition : 10.12.91
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2200R412
Type number : 0 460 494 271
Customer Part-No. :

Customer-specific information
Customer : NISSAN

Engine : LD 20 II - E

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery

Indicator setting
Piston stroke mm: 1.00
Outlet : C

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200
Setting value mm: 3.30...3.70
AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1200
Setting value bar: 5.10...5.70
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 2200
Del. quantity cm3/
1000S.: 33.00...34.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

11

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 1.00...5.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2600
Del. quantity cm3/
1000S.: 12.00...18.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 48.00...52.00
mind 1000S.: 48.00
KSB/AFB
Valve Volt: 12
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 900
Inj.-qty. cm3/
difference 1000S.: 8.60...12.60
KSB/AFB
valve Volt: 12

Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 900  
TD-travel  
difference mm: 0.70...0.90  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1800  
TD travel mm: 6.00...6.80  
mm: (5.70...7.10)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1200  
TD travel mm: 3.30...3.70  
mm: (2.80...4.20)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 900  
TD travel mm: 1.50...2.30  
mm: (1.20...2.60)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
9th speed 1/min: 2200  
TD travel mm: 7.70...8.50  
mm: (7.60...8.60)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 900  
Supply-pump  
pressure bar: 4.20...4.80  
bar: (3.90...5.10)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1200  
Supply-pump  
pressure bar: 5.10...5.70  
bar: (4.80...6.00)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 2200  
Supply-pump  
pressure bar: 7.90...8.50  
bar: (7.60...8.80)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 1800  
Supply-pump  
pressure bar: 6.80...7.40  
bar: (6.50...7.70)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (27.80...97.30)  
2nd speed 1/min: 2200

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...138.90  
quantity cm<sup>3</sup>/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2950  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...5.00  
1000s.: (0.00...5.00)

5th speed 1/min: 2600  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 12.00...18.00  
1000s.: (10.50...19.50)

8th speed 1/min: 2350  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 26.00...34.00  
 1000S.: (24.50...35.50)  
 9th speed 1/min: 1800  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 32.10...34.10  
 1000S.: (30.60...35.60)  
 12th speed 1/min: 1200  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 31.00...34.00  
 1000S.: (30.00...35.00)  
 15th speed 1/min: 900  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 29.40...32.40  
 1000S.: (38.40...37.40)  
 17th speed 1/min: 2200  
 KSB solenoid-operated  
 valve volt: 12  
 Shutoff  
 electromagnet volt: 12  
 Del. quantity cm<sup>3</sup>/: 33.00...34.00  
 1000H.: (32.20...34.80)  
 20th speed 1/min: 600  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 30.10...33.10  
 1000S.: (29.10...43.10)

Mech. shutoff:  
 Mech. Abstellung:

1st speed 1/min: 2200  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet volt: 12  
 KSB/AFB  
 valve Volt: 12

Electr. shutoff:

1st speed 1/min: 350  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet volt: -  
 KSB/AFB  
 valve Volt: 12

Damper set qty.:

F28

LFG-setting:  
 solidale con carcassa:  
 Idle delivery:

1st speed 1/min: 350  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 7.50...11.50  
 1000S.: (5.50...13.50)

High Idle:

1st speed 1/mi: 500  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 7.00...11.00  
 1000S.: (5.00...13.00)

Residual:

1. Rotacao 1/min: 500  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 1.00...5.00  
 1000S.: (1.00...5.00)

Load-dependent start of delivery:  
 Inj.-qty.dif.measurement:

1st speed 1/min: 900  
 Inj.-qty. cm<sup>3</sup>/ : 8.00...10.00'  
 difference 1000S.: (8.00...10.00)  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 2nd speed 1/min: 900  
 Inj.-qty. cm<sup>3</sup>/: 8.60...12.60\*  
 difference 1000S.: (8.60...12.60)  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 900  
 Inj.-qty. cm<sup>3</sup>/: 2.00...8.00#  
 difference 1000S.: (2.00...8.00)  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12

TD-travel dif.measurement:  
 correttore anticipo iniezione (SV):

1st speed 1/min: 900  
TD-travel : 0.70...0.90\*  
difference mm: (0.70...0.90)  
KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 900  
TD-travel : 0.00...0.40#  
difference mm: (0.00...0.40)  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 900  
Supply pump-  
pressure : 0.10...0.30'  
difference bar: (0.10...0.30)  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 210  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 45.00...65.00  
1000S.: (45.00...65.00)

2nd speed 1/min: 310  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 25.00...45.00  
1000S.: (25.00...45.00)

4th speed 1/min: 100  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 48.00...52.00  
1000S.: (45.00...55.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.2...3.4  
KF mm: 5.6...6.0  
MS mm: 1.0...1.4

Remarks:  
:  
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 1.9 K4
Edition : 10.12.91
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2100R410
Type number : 0 460 494 272
Customer Part-No. :

Customer-specific information
Customer : FIAT-AUTO

Engine : M710 VT+ZT 19D

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 800
Charge press. hPa: 1000
Setting value mm: 1.00...1.40
AFB/AFB
valve Volt: 12

G02

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 800
Charge press. hPa: 1000
Setting value bar: 3.20...3.80
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 44.00...45.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (2.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000S.: 29.00...30.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

11

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 11.00...15.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.5
1000S.: (2.5)

Residual-Delivery Setting

Speed 1/min: 700
Del. quantity cm3/
1000S.: 4.00...6.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load speed regulation



Speed 1/min: 2450  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 12.00...20.00

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 50.00...80.00  
mind 1000S.: 50.00

KSB/AFB  
Valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 800  
Inj.-qty. cm<sup>3</sup>/  
difference 1000S.: 10.00...18.00

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 800  
TD-travel  
difference mm: 0.70...0.90  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2100  
Charge press hPa: 1000  
TD travel mm: 8.60...9.40  
mm: (8.30...9.40)

KSB/AFB  
valve Volt: 12  
electromagnet Volt: 12  
2nd speed 1/min: 800  
Charge press hPa: 1000  
TD travel mm: 1.00...1.40  
mm: (0.70...1.70)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1500

Charge press hPa: 1000  
TD travel mm: 5.10...5.90  
mm: (4.80...6.20)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 2.50...5.50 B  
mm: (2.50...5.50)

KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
5th speed 1/min: 500  
Charge press. hPa: 1000  
TD travel mm: 3.50...4.50 A  
mm: (2.50...5.50)

KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 5.30...5.90  
bar: (5.10...6.10)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 2100  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 7.00...7.60  
bar: (6.80...7.80)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 800  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 3.20...3.80  
bar: (3.00...4.00)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 800  
Charge press. hPa: 1000  
KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12  
Overflow : 41.00...83.00  
quantity cm<sup>3</sup>/10s: (26.00...98.00)  
2nd speed 1/min: 2100  
Charge press. hPa: 1000  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Overflow : 55.00...138.00  
quantity cm<sup>3</sup>/10s: (40.00...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800\*  
Charge-air pressure-setting  
point hPa: 400  
LDA-stroke mm: 6.6  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.50...36.50  
1000S.: (33.50...38.50)

3rd speed 1/min: 2450  
Charge press. hPa: 1000  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 12.00...20.00  
1000S.: (11.00...21.00)

5th speed 1/min: 2300  
Charge press. hPa: 1000  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 30.00...36.00  
1000S.: (29.00...37.00)

9th speed 1/min: 2100  
Charge press. hPa: 1000  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 43.00...46.00  
1000S.: (42.00...47.00)

10th speed 1/min: 600  
Charge press. hPa: -  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 29.00...30.00  
1000S.: (27.00...32.00)

12th speed 1/min: 1500  
Charge press. hPa: 1000

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 44.00...45.00  
1000S.: (42.50...46.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -  
KSB/AFB  
valve Volt: 12

Idle delivery:

1st speed 1/min: 400  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 11.00...15.00  
1000S.: (9.50...16.50)  
Dispersion cm<sup>3</sup>/: 2.5  
1000S.: (2.5)

Residual:

1.Rotacao 1/min: 700  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 4.00...6.00  
1000S.: (3.00...7.00)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 800  
Charge press. hPa: -  
Inj.-qty. cm<sup>3</sup>/ : 10.00...18.00  
difference 1000S.: (10.00...18.00)  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 800  
Charge press. hPa: -  
TD-travel : 0.70...0.90  
difference mm: (0.70...0.90)  
KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 220  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 50.00...80.00  
1000S.: (50.00...80.00)

2nd speed 1/min: 300  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 32.50...47.50  
1000S.: (32.50...47.50)

4th speed 1/min: 100  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 40.00...80.00  
1000S.: (40.00...80.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 5.6...6.0  
KF mm: 3.2...3.4  
MS mm: 1.0...1.4  
LDA stroke mm: 6.6

Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Overflow restriction 0.55 mm - Part No. ..303

A = KSB adjustment point  
B = KSB curve point

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1.9 C5  
Edition : 10.12.91  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/9F2200R420  
Type number : 0 460 494 277  
Customer Part-No. :

Customer-specific information  
Customer : VW

Engine : 028.D - 1.9l.

Power KW: 55

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery

Indicator setting  
Piston stroke mm: 1.0  
Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250  
Setting value mm: 3.50...3.90

Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250  
Setting value bar: 5.50...6.10  
Shutoff  
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250  
Del. quantity cm<sup>3</sup>/  
1000S.: 42.00...43.00

Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/: 2.5  
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 575  
Del. quantity cm<sup>3</sup>/  
1000S.: 5.50...6.50

Shutoff  
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2525  
Del. quantity cm<sup>3</sup>/  
1000S.: 10.00...14.00

Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 35.00...65.00  
mind 1000S.: 35.00  
Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1250  
Charge press hPa: 12  
Inj.-qty. cm<sup>3</sup>/  
difference 1000S.: 4.00...10.00  
Shutoff

electromagnet Volt: 12  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 1250  
TD-travel  
difference mm: 0.60...0.80  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000  
TD travel mm: 6.50...7.30  
mm: (6.20...7.60)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
TD travel mm: 3.50...3.90  
mm: (3.00...4.40)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 750  
TD travel mm: 1.40...2.20  
mm: (1.10...2.50)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Supply-pump  
pressure bar: 4.30...4.90  
bar: (4.10...5.10)

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
Supply-pump  
pressure bar: 5.50...6.10  
bar: (5.30...6.30)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 2200  
Supply-pump  
pressure bar: 7.70...8.30  
bar: (7.50...8.50)

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 400  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (27.80...97.30)  
2nd speed 1/min: 2200  
Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...138.90  
quantity cm<sup>3</sup>/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...6.00  
1000S.: (0.00...6.00)  
5th speed 1/min: 2525  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 10.00...14.00  
1000S.: (8.00...16.00)

8th speed 1/min: 2425  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 19.00...29.00  
1000S.: (18.00...30.00)

9th speed 1/min: 2200  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 36.50...38.50  
1000S.: (35.30...39.70)

12th speed 1/min: 1250  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 42.00...43.00  
1000S.: (40.30...44.70)

15th speed 1/min: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 34.00...37.00  
1000S.: (32.50...38.50)

20th speed 1/min: 400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.50...41.50  
1000S.: (33.00...44.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Damper set qty.:

LFG-setting:  
solidale con carcassa:  
Idle delivery:

1st speed 1/ 450  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 9.00...11.00  
1000S.: (6.00...14.00)

High Idle:

1st speed 1/mi: 525

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 9.00...11.00  
1000S.: (6.00...14.00)

Residual:

1. Rotacao 1/min: 575  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 5.50...6.50  
1000S.: (4.00...8.00)  
2nd speed 1/min: 525  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 7.30...9.30  
1000S.: (5.80...10.80)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/ : 4.00...10.00#  
difference 1000S.: (3.00...11.00)  
Shutoff  
electromagnet Volt: 12  
5th speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/ : 0.00...3.00\*  
difference 1000S.: (0.00...3.00)  
Shutoff  
electromagnet Volt: 12

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1250  
TD-travel : 0.60...0.80#  
difference mm: (0.60...0.80)  
Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
TD-travel : 1.80...2.20\*  
difference mm: (1.50...2.50)

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: -  
3rd speed 1/min: 1250  
Supply pump-  
pressure : 1.10...1.50\*  
difference bar: (0.90...1.70)  
Shutoff  
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)

1st speed 1/min: 1000

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 27.00...29.00  
1000S.: (25.00...31.00)

Automatic starting fuel delivery:

1st speed 1/min: 180  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.00...75.00  
1000S.: (35.00...75.00)  
2nd speed 1/min: 380  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 30.00...50.00  
1000S.: (30.00...50.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.00...65.00  
1000S.: (35.00...65.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.2...3.4  
KF mm: 5.1...5.5  
MS mm: 1.1...1.5

Remarks:

:  
Overflow restriction 0.55 mm - Part No.  
..303

On initial measurement, screw in  
residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out  
residual-quantity adjusting screw 2 mm.

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU 1,9 K10  
Edition : 04.12.91  
replaces : -  
Calibrating oil : ISO-4113  
Injection pump : VE4/9F2250R445  
Type number : 0 460 494 278  
Customer Part-No. :

Customer-specific information  
Customer : PSA

Engine : XUD 9 TE-L (Cit.)

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 42.00...48.00  
Electronically : 40.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250  
Charge press. hPa: 1000  
Setting value mm: 3.80...4.20  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250  
Charge press hPa: 1000  
Setting value bar: 5.60...6.20  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 53.50...54.50

Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/  
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm<sup>3</sup>/  
1000S.: 40.00...41.00

Shutoff  
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400  
Charge press hPa: -  
Del. quantity cm<sup>3</sup>/  
1000S.: 12,0...14.0

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/  
1000S.: (3,0)

Residual-Delivery Setting

Speed 1/min: 500  
Del. quantity cm<sup>3</sup>/  
1000S.: 6.00...7.00

Shutoff  
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2575  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 12.00...16.00

Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 150  
Del. quantity cm<sup>3</sup>/  
mind 1000S.: 37.00  
Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1250  
Charge press hPa: -  
Inj.-qty. cm3/  
difference 1000S.: 11.00...15.00  
Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 1250  
Charge press hPa: -  
TD-travel  
difference mm: 0.90...1.10  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000  
Charge press hPa: 1000  
TD travel mm: 6.40...7.20  
mm: (6.10...7.50)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
Charge press hPa: 1000  
TD travel mm: 3.80...4.20  
mm: (3.30...4.70)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 750  
Charge press hPa: 1000  
TD travel mm: 1.50...2.30  
mm: (1.20...2.60)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 4.40...5.00  
Shutoff

electromagnet Volt: 12  
2nd speed 1/min: 1250  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 5.60...6.20  
bar: -

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 2000  
Charge press. hPa: 1000

Supply-pump  
pressure bar: 7.30...7.90  
Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm3/10s: (26.70...98.40)  
2nd speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...139.00  
quantity cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750  
Charge-air pressure-setting  
point hPa: 350  
LDA-stroke mm: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 48.00...49.00  
1000S.: (45.50...51.50)

2nd speed 1/min: 2750  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 0.00...6.00  
1000S.: -

5th speed 1/min: 2575  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 12.00...16.00  
1000S.: (10.00...18.00)

8th speed 1/min: 2375  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 33.00...43.00  
1000S.: (32.00...44.00)

9th speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 50.00...52.00  
1000S.: (48.80...53.20)

10th speed 1/min: 2000  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12



Del. quantity cm<sup>3</sup>/: 51.00...53.00  
1000S.: (49.80...54.20)  
12th speed 1/min: 1250  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 53.50...54.50  
1000S.: (51.80...56.20)  
18th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 40.00...41.00  
1000S.: (37.50...43.50)  
20th speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 47.50...50.50  
1000S.: (46.00...52.00)

Mech. shutoff:  
Mech. Abstimmung:

1st speed 1/min: 2000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -

Shutoff  
electromagnet volt: 12  
KSB/AFB  
valve Volt: -

Electr. shutoff:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: -

Shutoff  
electromagnet volt: -

Idle delivery:

Damper set qty.:

1st speed 1/min: 600  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 27.00...35.00  
1000S.: -

LFG-setting:  
solidale con carcassa:  
Idle delivery:

1st speed 1/min: 400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 12.00...14.00  
1000S.: (9.00...17.00)

High Idle:

1st speed 1/mi: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 11.00...13.00  
1000S.: (8.00...16.00)

Residual:

1.Rotacao 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 6.00...7.00  
1000S.: (4.50...8.50)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
Charge press. hPa: -  
Inj.-qty. cm<sup>3</sup>/ : 2.00...8.00  
difference 1000S.: -  
Shutoff  
electromagnet Volt: 12

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1250  
Charge press. hPa: -  
TD-travel : 2.10...2.50  
difference mm: (1,60...3.00)  
Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1250  
Charge press. hPa: -  
Supply pump-  
pressure : 0,9...1.30  
difference bar: (0,7...1,50)  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

2nd speed 1/min: 380  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 25.00...45.00  
1000S.: (25.00...45.00)

3rd speed 1/min: 200  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 50.00...56.00  
1000s.: (45.50...60.50)

4th speed 1/min: 150

Charge press. hPa: -

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 37.00...67.00  
1000s.: (37.00...67.00)

Shutoff electromagnet:

Cut-in

min voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: 3,2...3,4

KF mm: K-0T

Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each  
manifold-pressure compensator pressure  
change.

Overflow restriction 0.55 mm - Part No.  
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW 1.9 C6
Edition : 10.12.91
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2200R420-4
Type number : 0 460 494 287
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 028.D - 1.9L.

Power KW: 55

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.50...3.90

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 5.50...6.10
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 42.00...43.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 575
Del. quantity cm3/
1000S.: 5.50...6.50

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2525
Del. quantity cm3/
1000S.: 10.00...14.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 35.00...65.00
mind 1000S.: 35.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: 4.00...10.00

Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correctore anticipo iniezione (SV)

1.Speed 1/min: 1250
TD-travel
difference mm: 0.60...0.80

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000  
TD travel mm: 6.50...7.30  
mm: (6.20...7.60)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
TD travel mm: 3.50...3.90  
mm: (3.00...4.40)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 750  
TD travel mm: 1.40...2.20  
mm: (1.10...2.50)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Supply-pump  
pressure bar: 4.30...4.90  
bar: (4.10...5.10)

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
Supply-pump  
pressure bar: 5.50...6.10  
bar: (5.30...6.30)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 2200  
Supply-pump  
pressure bar: 7.70...8.30  
bar: (7.50...8.50)

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 400  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (27.80...97.30)  
2nd speed 1/min: 2200  
Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...138.90  
quantity cm<sup>3</sup>/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...6.00  
1000S.: (0.00...6.00)

5th speed 1/min: 2525  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 10.00...14.00  
1000S.: (8.00...16.00)

8th speed 1/min: 2425  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 19.00...29.00  
1000S.: (18.00...30.00)

9th speed 1/min: 2200  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 36.50...38.50  
1000S.: (35.30...39.70)

12th speed 1/min: 1250  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 42.00...43.00  
1000S.: (40.30...44.70)

15th speed 1/min: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 34.00...37.00  
1000S.: (32.50...38.50)

20th speed 1/min: 400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.50...41.50  
1000S.: (33.00...44.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Damper set qty.:

LFG-setting:  
solidale con carcassa:  
Idle delivery:

1st speed 1/min: 450  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 9.00...11.00  
1000S.: (6.00...14.00)

High Idle:

1st speed 1/mi: 525

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 9.00...11.00  
1000S.: (6.00...14.00)

Residual:

1. Rotacao 1/min: 575  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 5.50...6.50  
1000S.: (4.00...8.00)  
2nd speed 1/min: 525  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 7.30...9.30  
1000S.: (5.80...10.80)

Load-dependent start of delivery:  
Inj.-qty. dif. measurement:

1st speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/ : 4.00...10.00#  
difference 1000S.: (3.00...11.00)  
Shutoff  
electromagnet Volt: 12  
5th speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/: 0.00...3.00\*  
difference 1000S.: (0.00...3.00)  
Shutoff  
electromagnet Volt: 12

TD-travel dif. measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1250  
TD-travel : 0.60...0.80#  
difference mm: (0.60...0.80)  
Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
TD-travel : 1.80...2.20\*  
difference mm: (1.50...2.50)

SP press.-dif. measurement:  
pompa di mandata (FP):  
1st speed 1/min: -  
3rd speed 1/min: 1250  
Supply pump-  
pressure : 1.10...1.50\*  
difference bar: (0.90...1.70)  
Shutoff  
electromagnet Volt: 12

Part-load del. at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)

1st speed 1/min: 1000

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 27.00...29.00  
1000S.: (25.00...31.00)

Automatic starting fuel delivery:

1st speed 1/min: 180  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.00...75.00  
1000S.: (35.00...75.00)

2nd speed 1/min: 380  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 30.00...50.00  
1000S.: (30.00...50.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.00...65.00  
1000S.: (35.00...65.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.2...3.4  
KF mm: 5.1...5.5  
MS mm: 1.1...1.5

Remarks:

Overflow restriction 0.55 mm - Part No. ..303

On initial measurement, screw in residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out residual-quantity adjusting screw 2 mm.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF 2,5 R6
Edition : 05.12.91
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE4/9F1900R428
Type number : 0 460 494 289

Customer-specific information
Customer : IVECO-SOFIM

Engine : 8140.97.2780

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0,40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147,00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 4,10...4,50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000

Setting value bar: 4,7...5,3
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1800
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 57,5...58,5
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3,0
1000S.: -

Full-load del. w/out charge press.:

Speed 1/min: 550
Del. quantity cm3/
1000S.: 40,0...41,0
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Charge press hPa: -
Del. quantity cm3/
1000S.: 8,0...12,0

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2,5
1000S.: (3,0)

Full-load speed regulation

Speed 1/min: 2150
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 32,0...38,0

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Charge press hPa: -
Del. quantity cm3/: -
mind 1000S.: 45,0

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1000
Charge press hPa: 1000
Inj.-qty. cm3/
difference 1000S.: 13,5...19,5 \*

Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 1000  
Charge press hPa: 1000  
TD-travel  
difference mm: 0,4...0,6 \*  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 550  
Charge press hPa: 1000  
TD travel mm: 1,0...1,8  
mm: (0,7...2,1)  
electromagnet Volt: 12  
2nd speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 4,1...4,5  
mm: (3,6...5,0)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1400  
Charge press hPa: 1000  
TD travel mm: 6,1...6,9  
mm: (5,8...7,2)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 1900  
Charge press hPa: 1000  
TD travel mm: 8,7...9,5  
mm: (8,4...9,8)

Supply-pump pressure characteristic:

1st speed 1/min: 550  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 2,8...3,4  
Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1000  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 4,7...5,3  
Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1900  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 7,8...8,4  
Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 550  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Overflow : 41,6...83,3  
quantity cm<sup>3</sup>/10s: (26,6...98,3)  
2nd speed 1/min: 1900  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Overflow : 55,5...138,8  
quantity cm<sup>3</sup>/10s: (40,5...153,8)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800  
Charge-air pressure-setting  
point hPa: 500  
LDA-stroke mm: 5,3  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 54,0...56,0  
1000S.: (52,0...58,0)  
2nd speed 1/min: 2400  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
1000S.: -  
3rd speed 1/min: 2150  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 32,0...38,0  
1000S.: (30,0...40,0)  
4th speed 1/min: 2050  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 49,5...56,5  
1000S.: (48,0...58,0)  
5th speed 1/min: 1900  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 57,5...59,5  
1000S.: (56,0...61,0)  
6th speed 1/min: 1800  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 58,5...59,5  
1000S.: (57,0...61,0)  
7th speed 1/min: 1000  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 56,0...59,0  
1000S.: (55,0...60,0)  
8th speed 1/min: 800  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 55,5...58,5  
1000S.: (54,5...59,5)  
9th speed 1/min: 550  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 40,0...41,0  
1000S.: (38,0...43,0)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
1000S.: -  
Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 8,0...12,0  
1000S.: (5,5...14,5)  
Dispersion cm<sup>3</sup>/: 2,5  
1000S.: (3,0)  
2nd speed 1/min: 400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 4,0...10,0  
1000S.: (2,0...12,0)  
3rd speed 1/min: 700  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0,0...3,0

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1000  
Charge press. hPa: 1000  
Inj.-qty. cm<sup>3</sup>/ : 12,0...14,0 \*  
difference 1000S.: -  
Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1000  
Charge press. hPa: 1000  
Inj.-qty. cm<sup>3</sup>/: 2,0...8,0 #  
difference 1000S.: -  
Shutoff  
electromagnet Volt: 12

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1000  
Charge press. hPa: 1000  
TD-travel : 0,7...1,1 #  
Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1000  
Charge press. hPa: 1000  
Supply pump-  
pressure : 0,1...0,3 \*  
Shutoff  
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.  
terza fermo della portata  
stop (EGR set)  
scarico) (ARF)  
gaz d'échappement-ARF)  
Spacing mm: 12,0

1st speed 1/min: 1100  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 31,5...33,5  
1000S.: (29,5...35,5)

Automatic starting fuel delivery:

1st speed 1/min: 300  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 45,0...65,0  
1000S.: -

2nd speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 25,0...45,0  
1000S.: -

Shutoff electromagnet:

Cut-in  
min voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm: 3,2...3,4  
KF mm: 5,6...6,0  
MS mm: 0,9...1,3



LDA stroke mm: 5,3

Ajustement Potentiometer:

Supply voltage

pot. volt: 5,0

Output volt

pot. volt: 2,8

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut (46)



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 1,7 D
Edition : 03.12.91
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2300R443
Type number : 0 460 494 293
Customer Part-No. :

Customer-specific information
Customer : OPEL

Engine : 17 YD

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 2.00...2.40
AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 4.00...4.60
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1300
Del. quantity cm3/
1000S.: 31,2...32,2
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2,5
1000S.: (2,5)

11

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
1000S.: 6,3...10,3
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2,5
1000S.: (3,0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 1.50...2.50
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2735
Del. quantity cm3/
1000S.: 7.00...11.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 28,0...44,0
mind 1000S.: -
KSB/AFB
Valve Volt: 12

Shutoff  
 electromagnet Volt: 12

Load-dependent start of delivery:  
 Inj.-qty.dif.measurement:

Speed 1/min: 1000  
 Charge press hPa: 12  
 Inj.-qty. cm<sup>3</sup>/  
 difference 1000S.: 11.00...19.00  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 TD-travel dif.measurement  
 correttore anticipo iniezione (SV)  
 1.Speed 1/min: 1000  
 TD-travel  
 difference mm: 0.60...0.80  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 SP press.-dif.measurement  
 pompa di mandata (FP)  
 1.Speed 1/min: 1000  
 Supply pump  
 pressure  
 difference bar: 0,10...0,30  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12

Inspection-pump test specifications  
 Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 300  
 TD travel mm: 0,80...3,20  
 mm: -

KSB/AFB  
 valve Volt: -  
 electromagnet Volt: 12  
 2nd speed 1/min: 800  
 TD travel mm: 1,90...4,30  
 mm: -

KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1000  
 TD travel mm: 1,90...4,30  
 mm: -

KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 800

TD travel mm: 0.90...1.70  
 mm: (0.60...2.00)

KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 5th speed 1/min: 1000  
 TD travel mm: 2,00...2,40  
 mm: (1,50...2,90)

KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 6th speed 1/min: 2000  
 TD travel mm: 6,70...7,50  
 mm: -

KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 7.Rotacao 1/min: 2300  
 TD travel mm: 7,50...8,30  
 mm: (7,20...8,60)

KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2000  
 Supply-pump  
 pressure bar: 7.60...8.20  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 2nd speed 1/min: 1000  
 Supply-pump  
 pressure bar: 4.00...4.60  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 800  
 Supply-pump  
 pressure bar: 3.40...4.00  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12

Overflow : 41.70...83.40  
quantity cm3/10s: (26.70...98.40)  
2nd speed 1/min: 2300  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...139.00  
quantity cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2735  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 7,00...11,00  
1000S.: (5,00...13,00)  
2nd speed 1/min: 2575  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 18,5...24,50  
1000S.: -  
3rd speed 1/min: 2300  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 27,2...28,8  
1000S.: (26,2...30,8)  
4th speed 1/min: 2000  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 27,7...30,3  
1000S.: (26,7...31,3)  
5th speed 1/min: 1300  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 31,2...32,2  
1000S.: (29,4...34,0)  
6th speed 1/min: 700  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 24,5...27,5  
1000S.: (23,0...29,0)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450  
Del. quantity cm3/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -  
KSB/AFB  
valve Volt: -

Damper set qty.:

LFG-setting:  
solidale con carcassa:  
Idle delivery:

1st speed 1/min: 450  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 6,3...10,3  
1000S.: (4,3...12,3)  
Dispersion cm3/: 2,5  
1000S.: (3,0)

Residual:

1.Rotacao 1/min: 500  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 1.50...2.50  
1000S.: (0.00...4.00)  
2nd speed 1/min: 750  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 0.00...1.60  
1000S.: -

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1000  
Inj.-qty. cm3/ : 8.00...10.00  
difference 1000S.: -  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1000  
Inj.-qty. cm3/: 11,0...19,0  
difference 1000S.: -  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

TD-travel dif.measurement:

correttore anticipo iniezione (SV):

1st speed 1/min: 1000  
TD-travel : 0.60...0.80  
difference mm: -

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:

pompa di mandata (FP):  
1st speed 1/min: 1000  
Supply pump-  
pressure : 0.10...0.30  
difference bar: -

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 400  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 25.00...35.00  
1000S.: -

2nd speed 1/min: 500  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 22.50...32.50  
1000S.: -

3rd speed 1/min: 100  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 28.00...44.00

Shutoff electromagnet:

Cut-in  
min voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: 3,2...3,4  
KF mm: 5,3...5,7  
MS mm: 0,7...1,1  
XK mm: -  
XL mm: -

Remarks:

:  
:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,9 C6  
Edition : 04.12.91  
replaces : -  
Calibrating oil : ISO-4113  
Injection pump : VE4/9F2300R447-4  
Type number : 0 460 494 296  
Customer Part-No. :

Customer-specific information  
Customer : VW

Engine : 1,9 l UD f. Golf

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 000

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel

Speed 1/min: 1250  
Charge press. hPa: 750  
Setting value mm: 4.70...5.10  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250  
Charge press hPa: 750  
Setting value bar: 5.40...6.00  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/  
1000S.: 49.30...50.30

Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/: 2.5  
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 600  
Del. quantity cm<sup>3</sup>/  
1000S.: 37,5...40,5

Shutoff  
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 450  
Charge press hPa: -  
Del. quantity cm<sup>3</sup>/  
1000S.: 16.0...18.0

Shutoff  
electromagnet Volt: 12

Residual-Delivery Setting

Speed 1/min: 550  
Del. quantity cm<sup>3</sup>/  
1000S.: 7.00...8.00

Shutoff  
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2600  
Charge press hPa: 750  
Del. quantity cm<sup>3</sup>/  
1000S.: 9.00...13.00

Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1250  
Charge press hPa: -  
Inj.-qty. cm<sup>3</sup>/  
difference 1000S.: 7.00...11.00  
Shutoff  
electromagnet Volt: 12

TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 1250  
Charge press hPa: -  
TD-travel  
difference mm: 1.90...2.10  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100  
Charge press hPa: 750  
TD travel mm: 8.44...9.20  
mm: (8.10...9.50)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
Charge press hPa: 750  
TD travel mm: 4.70...5.10  
mm: (4.20...5.60)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 750  
Charge press hPa: 750  
TD travel mm: 2.10...2.90  
mm: (1.80...3.20)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 4.30...4.90

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 5.40...6.00

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 2100  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 7.40...8.00

Shutoff  
electromagnet Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 700  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12

Overflow : 41.70...83.40  
quantity cm3/10s: (26.70...98.40)  
2nd speed 1/min: 2100  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...138.90  
quantity cm3/10s: (40.60...154.90)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700  
Charge-air pressure-setting  
point hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/1000S.: 38,0...41,0

2nd speed 1/min: 700  
Charge press. hPa: 180  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/1000S.: 39,0...40,0

3rd speed 1/min: 700  
Charge press. hPa: 300  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/1000S.: 34,4...35,4

4th speed 1/min: 2600  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/1000S.: 9,0...13,0  
(7,0...15,0)

5th speed 1/min: 2500  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/1000S.: 19,0...29,0  
(18,0...30,0)

6th speed 1/min: 2400  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/1000S.: 35,0...45,0  
(34,0...46,0)

9th speed 1/min: 2100  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/1000S.: 41.30...43.30  
(40.10...44.50)

12th speed 1/min: 1250  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 49.30...50.30  
1000S.: (47,60...52,00)  
13th speed 1/min: 700  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 42,7...45,7  
1000S.: (42,0...46,4)  
16th speed 1/min: 600  
Charge press. hPa: -  
Shutoff  
electromagnet volt: 12  
Del. quantity cm<sup>3</sup>/: 37.50...40.50  
1000H.: (36.00...42.00)  
21th speed 1/min: 450  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 37.00...43.00  
1000S.: (34.50...45.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)  
Shutoff  
electromagnet volt: -

Damper set qty.:

LFG-setting:  
solidale con carcassa:  
Idle delivery:

1st speed 1/min: 450  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 16.00...18.00  
1000S.: (13.00...21.00)

High Idle:

1st speed 1/mi: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 16.00...18.00  
1000S.: (13.00...21.00)

Residual:

1. Rotacao 1/min: 550  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 7.00...8.00  
1000S.: (5.50...9.50)

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/: 7,0...11,0 \*  
difference 1000S.: (5,0...13,0) \*  
Shutoff  
electromagnet Volt: 12

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1250  
Charge press. hPa: -  
TD-travel : 1,90...2,10 \*  
difference mm: -  
2nd speed 1/min: 1250  
Charge press. hPa: -  
TD-travel : 2,30...3,10 #  
difference mm: -

SP press.-dif.measurement:

pompa di mandata (FP):  
1st speed 1/min: 1250  
Supply pump-  
pressure : 0,80...1,60 #

Automatic starting fuel delivery:

1st speed 1/min: 180  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.00...55.00  
1000S.: -

2nd speed 1/min: 380  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 31.00...51.00  
1000S.: -

3rd speed 1/min: 100  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 37.00...43.00  
1000S.: (32.50...47.50)

Shutoff electromagnet:

Cut-in  
min voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm: 3,6...3,8  
KF mm: K-OT  
MS mm: 1,1...1,5



LDA stroke mm: -

Remarks:  
:



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 1,9 K  
Edition : 05.12.91  
replaces : -  
Calibrating oil : ISO 4113

Injection pump : VE4/9F2100R466  
Type number : 0 460 494 304

Customer-specific information  
Customer : FIAT TIPO TEMPRA

Engine : M710

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500  
Charge press. hPa: 1000  
Setting value mm: 6,2...6,4  
AFB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

G28

Speed 1/min: 1500  
Charge press hPa: 1000  
Setting value bar: 5,7...6,3  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm3/  
1000S.: 52,00...53,00

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 2,5  
1000S.: (2,5)

Full-load del. w/out charge press.:

Speed 1/min: 800  
Del. quantity cm3/  
1000S.: 48,5...49,5

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

11

Low-idle speed regulation

Speed 1/min: 450  
Charge press hPa: -  
Del. quantity cm3/  
1000S.: 11,0...15,0

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 2,5  
1000S.: (2,5)

Residual-Delivery Setting

Speed 1/min: 700  
Charge press. hPa: -  
Del. quantity cm3/  
1000S.: 4,0...6,0

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2300  
Charge press hPa: 1000

Del. quantity cm<sup>3</sup>/  
1000S.: 35,0...41,0

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Charge press hPa: -  
Del. quantity cm<sup>3</sup>/  
mind 1000S.: 50,0

KSB/AFB  
Valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1500  
Charge press hPa: -  
Inj.-qty. cm<sup>3</sup>/  
difference 1000S.: 5,0...7,0 \*

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 1500  
Charge press hPa: -  
TD-travel  
difference mm: 0,8...1.0 \*  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500  
Charge press hPa: 1000  
TD travel mm: 3,90...5,50  
mm: (3,20...6,20)

KSB/AFB  
valve Volt: -  
electromagnet Volt: 12  
2nd speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 3,50...6,50  
mm: -

KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12

3rd speed 1/min: 800  
Charge press hPa: 1000  
TD travel mm: 1,6...2,4  
mm: (1,3...2,7)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 1500  
Charge press hPa: 1000  
TD travel mm: 6,0...6,4  
mm: (5,6...6,8)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
5th speed 1/min: 2100  
Charge press. hPa: 1000  
TD travel mm: 8,6...9,4  
mm: (8,3...9,7)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 3,7...4,3

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 5,7...6,3

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 2100  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 7,3...7,9

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 800  
Charge press. hPa: 1000  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Overflow : 75...119  
quantity cm<sup>3</sup>/10s: (60...134)  
2nd speed 1/min: 2100  
Charge press. hPa: 1000  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Overflow : 97...180,5  
quantity cm<sup>3</sup>/10s: (82...195,5)  
Delivery-quant. and breakaway char.:

1st speed 1/min: 800\*  
Charge-air pressure-setting  
point hPa: 400  
LDA-stroke mm: 5,2  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 48,5...49,5  
1000S.: (46,5...51,5)

2nd speed 1/min: 2450  
Charge press. hPa: 1000  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 17,0...25,0  
1000S.: (16,0...26,0)

3rd speed 1/min: 2300  
Charge press. hPa: 1000  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35,0...41,0  
1000S.: (33,0...43,0)

4th speed 1/min: 2100  
Charge press. hPa: 1000  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 47,6...50,6  
1000S.: (46,6...51,6)

5th speed 1/min: 1500  
Charge press. hPa: 1000  
KSB/AFB  
valve Volt: 12  
Shutoff

electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 52,0...53,0  
1000S.: (50,5...54,5)

6th speed 1/min: 600  
Charge press. hPa: -  
KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 39,5...40,5  
1000S.: (37,5...42,5)  
7th speed 1/min: 800  
Charge press. hPa: -  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 38,1...40,7  
1000S.: (37,2...42,2)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 0.0...3.0  
1000S.: -

Shutoff  
electromagnet volt: -  
KSB/AFB  
valve Volt: 12

Damper set qty.:

LFG-setting:  
solidale con carcassa:  
Idle delivery:

1st speed 1/min: 450  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 11,0...15,0  
1000S.: (9,0...17,0)

Residual:

1.Rotacao 1/min: 700  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 4,0...6,0  
1000S.: (3,0...7,0)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1500  
Charge press. hPa: -  
Inj.-qty. cm<sup>3</sup>/ : 5,0...7,0 \*  
difference 1000S.: -  
KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1500  
Charge press. hPa: -  
Inj.-qty. cm<sup>3</sup>/: 8,0...16,0 #  
difference 1000S.: -  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1500  
Charge press. hPa: -  
TD-travel : 0.8...1.0 #  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1500  
Charge press. hPa: -  
Supply pump-  
pressure : 0,1...0,3 \*  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 220  
Charge press. hPa: -  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 52,0...78,0  
1000S.: -

2nd speed 1/min: 300  
Charge press. hPa: -  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35,5...45,5  
1000S.: -

Shutoff electromagnet:

Cut-in  
min voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm: 3,2...3,4  
KF mm: 5,2...5,6  
MS mm: 1,0...1,4  
LDA stroke mm: 5,2

Operate control lever after each  
manifold-pressure compensator pressure  
change.

\* Correction at adjusting nut (46)

Overflow restriction 0.75 mm - Part No.  
..343,..344

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1.6 X18
Edition : 09.12.91
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2250R328-6
Type number : 0 460 494 311
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 1.6l TD/LLK

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Charge press. hPa: 750
Setting value mm: 3.00...3.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 750
Setting value bar: 4.90...5.50
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750
Del. quantity cm3/
1000S.: 42.00...43.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 27.60...28.20

Shutoff
electromagnet Volt: 12

Residual-Delivery Setting

Speed 1/min: 615
Del. quantity cm3/
1000S.: 4.00...5.00

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2525
Charge press hPa: 750
Del. quantity cm3/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 35.00...85.00
mind 1000S.: 35.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: -
Inj.-qty. cm3/
difference 1000S.: 8.50...12.50
Shutoff
electromagnet Volt: 12

TD-travel dif. measurement  
correttore anticipo iniezione (SV)  
1. Speed 1/min: 1250  
Charge press hPa: -  
TD-travel  
difference mm: 0.60...0.80

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000  
Charge press hPa: 750  
TD travel mm: 6.40...7.20  
mm: (6.10...7.50)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
Charge press hPa: 750  
TD travel mm: 3.00...3.40  
mm: (2.50...3.90)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 1000  
Charge press hPa: 750  
TD travel mm: 1.70...2.50  
mm: (1.40...2.80)

Shutoff  
electromagnet Volt: 12  
5th speed 1/min: 2250  
Charge press. hPa: 750  
TD travel mm: 7.00...7.80  
mm: (6.70...8.10)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 700  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 3.30...3.90  
bar: (3.10...4.10)

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 4.90...5.50  
bar: (4.70...5.70)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 2250  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 7.70...8.30  
bar: (7.50...8.50)

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (27.80...97.30)  
2nd speed 1/min: 2250  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...138.90  
quantity cm<sup>3</sup>/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

1st speed 1/min: 900\*  
Charge-air pressure-setting  
point hPa: 300  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/ : 34.10...34.70  
1000S.: (31.40...37.40)

2nd speed 1/min: 2650  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/ : 0.00...6.00  
1000S.: (0.00...6.00)

5th speed 1/min: 2525  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/ : 13.00...17.00  
1000S.: (11.00...19.00)

8th speed 1/min: 2425  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/ : 26.50...36.50  
1000S.: (25.50...37.50)

9th speed 1/min: 2250  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/ : 35.50...37.50  
1000S.: (34.30...38.70)

12th speed 1/min: 1500  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/ : 42.00...43.00  
1000S.: (40.30...44.70)

16th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 28.20...30.60  
1000H.: (27.90...30.90)  
18th speed 1/min: 700  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 27.60...28.20  
1000S.: (24.90...30.90)  
20th speed 1/min: 700  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 34.00...37.00  
1000S.: (32.50...38.50)  
21th speed 1/min: 400  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 31.90...34.90  
1000S.: (31.70...35.10)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 465  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Damper set qty.:

LFG-setting:  
solidale con carcassa:  
Idle delivery:

1st speed 1/min: 465  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 12.00...14.00  
1000S.: (7.50...18.50)

High Idle:

1st speed 1/mi: 515  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 12.00...14.00  
1000S.: (8.00...18.00)

Residual:

1.Rotacao 1/min: 615  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 4.00...5.00  
1000S.: (1.50...7.50)  
2nd speed 1/min: 565

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 5.50...7.50  
1000S.: (3.00...10.00)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

3rd speed 1/min: 1250  
Inj.-qty. cm<sup>3</sup>/: 8.50...12.50'  
difference 1000S.: (6.50...14.50)

Shutoff  
electromagnet Volt: 12  
5th speed 1/min: 1250  
Charge press. hPa: -  
Inj.-qty. cm<sup>3</sup>/: 0.00...3.00#  
difference 1000S.: (0.00...3.00)

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
Charge press. hPa: -  
TD-travel : 0.60...0.80'  
difference mm: (0.60...0.80)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 1250  
Charge press. hPa: -  
TD-travel : 0.90...1.30#  
difference mm: (0.60...1.60)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 1250  
Supply pump-  
pressure : 0.60...1.00#  
difference bar: (0.40...1.20)  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 200  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.00...85.00  
1000S.: (35.00...85.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.00...85.00  
1000S.: (35.00...85.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:



Designation

K	mm: K1
KF	mm: 5.6...6.0
MS	mm: 1.2...1.6

Remarks:

⋮

Overflow restriction 0.55 mm - Part No.  
..303

\* Correction at adjusting nut (46)

Operate control lever after each  
manifold-pressure compensator pressure  
change.

On initial measurement, screw in  
residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out  
residual-quantity adjusting screw 2 mm.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a16  
 Edition : 18.12.91  
 Replaces : 28.9.89  
 Test oil : ISO-4113

Combination no. : 0 400 866 135

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV500...105DAOC2190  
 -30R  
 Governor no. : 0 420 233 234

Customer-spec. information  
 Customer : C.D.C.

Engine : 6-CT-I 8.3 ltr

1st version kW : 123.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 10.70...10.80  
 Del.quantity cm<sup>3</sup>/ : 9.9...10.1  
 100 s: (9.7...10.3)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.6)

2nd speed rpm : 500.0  
 Rack travel in mm : 5.3...5.5  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.0  
 100 s: (1.3...2.2)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del.quantity : 99.5...101.5  
 1000 : (97.5...103.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (6.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 50...58

Testing:

1st rack travel in: 9.70  
Speed rpm : 1095...1105  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 31...39  
Setting point w/out bumper spring  
Speed rpm : 500  
Rack travel in mm : 4.9

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 500  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.00  
Speed rpm : 570...630

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 750  
Rack travel in m: 12.10...12.30

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 120.5...124.5  
1000 s: (118.5...126.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1095...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 500  
Rack travel in mm : 5.30...5.50  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3915992

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a98  
 Edition : 18.12.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 145AA  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100AOC2190  
 -35R  
 Governor no. : 0 420 233 242

Customer-spec. information  
 Customer : CDC

Engine : 6 C  
 1st version kW : 100.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 047  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 017  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

H10

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 11.00...11.10

Del.quantity cm<sup>3</sup>/ : 10.0...10.1

100 s: (9.8...10.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 4.9...5.1

Del.quantity cm<sup>3</sup>/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 100.5...101.5

1000 : (98.0...104.0)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 93...101

Testing:

1st rack travel in: 10.00  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1020...1050  
4th rack travel in: 1470  
Speed rpm : 0.30...1.40

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:

#### LOW IDLE 1

Control lever  
position degrees: 74...82  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 470...530

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 500  
Rack travel in m: 11.00...11.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 98.5...100.5  
1000 s: (96.5...102.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 940...950

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (132.0...158.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.90...5.10  
Del.quantity cm<sup>3</sup>/ : 10.0...14.0  
1000 s: (7.5...16.5)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a78  
 Edition : 18.12.91  
 Replaces : 9.7.90  
 Test oil : ISO-4113

Combination no. : 0 400 866 161

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1000A0C2190  
 -49R  
 Governor no. : 0 420 233 263

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 151.4  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

H12

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm<sup>3</sup>/ : 12.3...12.5

100 s: (12.1...12.7)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 5.6...5.8  
 Del.quantity cm<sup>3</sup>/ : 1.4...1.8  
 100 s: (1.1...2.0)

Spread cm<sup>3</sup> : 0.6  
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Del.quantity : 123.0...125.0  
 1000 : (121.0...127.0)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (6.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 36...44

Testing:

1st rack travel in: 11.10  
Speed rpm : 1050...1060  
2nd rack travel in: 4.00  
Speed rpm : 1100...1130  
3rd rack travel in: 4.00  
Speed rpm : 1105...1135  
4th rack travel in: 1175  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.60...5.80

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1050...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Del. quantity cm<sup>3</sup>/ : 14.0...18.0  
1000 s: (11.5...20.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3915963

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : EIC 2,9 c 5  
 Edition : 18.12.91  
 Replaces : 29.11.91  
 Test oil : ISO-4113  
 Combination no. : 0 400 873 036  
 Injection pump  
 Pump designation : PES3A90D320RS2626  
 EP type number : 0 410 893 002  
 Governor  
 Governor design. : RSV300...975A1C2171-5R  
 Governor no. : 0 420 233 185

Customer-spec. information  
 Customer : EICHER

Engine : EDL3-2

1st version kW : 40.0  
 Rated speed : 1950

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30  
 : (2.15...2.35)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 2

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 11.30...11.40

Del.quantity cm<sup>3</sup>/ : 7.7...7.8

100 s: (7.5...8.0)

Spread cm<sup>3</sup> : 0.2

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 7.9...8.1

Del.quantity cm<sup>3</sup>/ : 1.5...2.5

100 s: (1.3...2.7)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975

Del.quantity : 77.0...78.0

1000 : (75.0...80.0)

Spread cm<sup>3</sup> : 2.50

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing:

1st rack travel in: 10.40

Speed rpm : 1015...1025

2nd rack travel in: 4.00



Speed rpm : 1045...1075  
3rd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1235  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 300  
Rack travel in mm : 7.90...8.10  
Rack travel in mm : 2.00  
Speed rpm : 400...460

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 975  
Rack travel in m: 11.30...11.40  
2nd speed rpm : 500  
Rack travel in m: 11.30...11.50

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 69.0...71.0  
1000 s: (66.5...73.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1015...1025

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 133.0...143.0  
1000 s: (130.0...146.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 q 1  
 Edition : 20.12.91  
 Replaces : 18.3.91  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 375  
 Injection pump  
 Pump designation : PES6A95D32ORS2693  
 EP type number : 0 410 896 914  
 Governor  
 Governor design. : RSV300...1300AOC2251  
 R  
 Governor no. : 0 420 233 272

Customer-spec. information  
 Customer : DAF

Engine : NT 116

1st version kW : 119.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 10.90...11.00

Del.quantity cm<sup>3</sup>/ : 6.1...6.2

100 s: (5.9...6.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm<sup>3</sup>/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 61.5...62.5

1000 : (59.5...64.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever  
position degrees: 104...112

Testing:

1st rack travel in: 9.30  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1390...1420  
3rd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1575  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 71...79  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 500  
Rack travel in m: 11.10...11.20  
4th speed rpm : 1050  
Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1290  
Del.quantity cm<sup>3</sup>/ : 68.0...70.0  
1000 s: (65.5...72.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30  
Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del.quantity cm<sup>3</sup>/ : 6.0...10.0  
1000 s: (3.5...12.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 r  
 Edition : 20.12.91  
 Replaces : 14.9.90  
 Test oil : ISO-4113

Combination no. : 0 400 876 376

Injection pump  
 Pump designation : PES6A95D320RS2796  
 EP type number : 0 410 896 901  
 Governor  
 Governor design. : RSV300...1300A0C2248  
 -2R  
 Governor no. : 0 420 233 274

Customer-spec. information  
 Customer : DAF

Engine : NS 156G

1st version kW : 156.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.90...13.00

Del.quantity cm<sup>3</sup>/ : 8.4...8.5

100 s: (8.2...8.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm<sup>3</sup>/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 84.5...85.5

1000 : (82.5...87.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever  
position degrees: 102...110

Testing:

1st rack travel in: 11.60  
Speed rpm : 1320...1330  
2nd rack travel in: 4.00  
Speed rpm : 1390...1420  
3rd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1570  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever  
position degrees: 71...79  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 500  
Rack travel in m: 13.70...13.80  
4th speed rpm : 1085  
Rack travel in m: 13.10...13.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.90...13.00

Measurement

Speed 1/min : 600  
1st pressure hPa : -  
Rack travel in m: 10.80...11.00  
2nd pressure hPa : 260  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 210  
Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 1290

Del.quantity cm<sup>3</sup>/ : 87.0...89.0  
1000 s: (84.5...91.5)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 44.5...45.5  
1000 s: (42.5...47.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1320...1330

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del.quantity cm<sup>3</sup>/ : 6.0...10.0  
1000 s: (3.5...12.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 q 2  
 Edition : 20.12.91  
 Replaces : 27.5.91  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 377  
 Injection pump  
 Pump designation : PES6A95D32ORS2693Z  
 EP type number : 0 410 896 913  
 Governor  
 Governor design. : RSV300...1300A0C2248  
 -1R  
 Governor no. : 0 420 233 273

Customer-spec. information  
 Customer : DAF

Engine : NS156

1st version kW : 156.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.00...12.10

Del.quantity cm<sup>3</sup>/ : 8.7...8.8

100 s: (8.5...9.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm<sup>3</sup>/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 700

Del.quantity : 87.5...88.5

1000 : (85.5...90.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever  
position degrees: 99...107

Testing:  
1st rack travel in: 11.00  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1380...1410  
3rd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1575  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 67...75  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 540...600

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 12.30...12.40  
2nd speed rpm : 500  
Rack travel in m: 12.30...12.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 12.00...12.10

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.30...10.50  
2nd pressure hPa : 290  
Rack travel in m: 11.50...11.60  
3rd pressure hPa : 260  
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 53.5...54.5  
1000 s: (51.5...56.5)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.00  
Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del.quantity cm<sup>3</sup>/ : 6.0...10.0  
1000 s: (3.5...12.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 q 3  
 Edition : 20.12.91  
 Replaces : 28.3.91  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 378  
 Injection pump  
 Pump designation : PES6A95D32ORS2693  
 EP type number : 0 410 896 914  
 Governor  
 Governor design. : RSV300...1300AOC2248  
 -2R  
 Governor no. : 0 420 233 274

Customer-spec. information  
 Customer : DAF

Engine : NT 133

1st version kW : 133.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.60...11.70

Del. quantity cm<sup>3</sup>/ : 7.6...7.7

100 s: (7.4...7.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del. quantity cm<sup>3</sup>/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del. quantity : 76.5...77.5

1000 : (74.5...79.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version



Control lever  
position degrees: 104...112

Testing:

1st rack travel in: 9.50  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1390...1420  
3rd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1570  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9  
Speed rpm : 300  
Rack travel in mm : 5.80...6.10  
Rack travel in mm : 2.00  
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 10.50...10.60  
2nd speed rpm : 500  
Rack travel in m: 11.80...11.90  
4th speed rpm : 1070  
Rack travel in m: 11.10...11.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.60...11.70

Measurement

Speed 1/min : 600  
1st pressure hPa : -  
Rack travel in m: 10.10...10.30  
2nd pressure hPa : 160  
Rack travel in m: 10.70...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 1290  
Del.quantity cm<sup>3</sup>/ : 73.0...75.0  
1000 s: (70.5...77.5)  
Aneroid pressure h: -

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 50.5...51.5  
1000 s: (48.5...53.5)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.50  
Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del.quantity cm<sup>3</sup>/ : 6.0...10.0  
1000 s: (3.5...12.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 o 8  
 Edition : 20.12.91  
 Replaces : 26.3.91  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 379  
 Injection pump  
 Pump designation : PES6A95D320RS2693  
 EP type number : 0 410 896 914  
 Governor  
 Governor design. : RSV300...1300AOC2248  
 -3R  
 Governor no. : 0 420 233 275

Customer-spec. information  
 Customer : DAF

Engine : NT 133

1st version kW : 133.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

H24

Rack travel in mm : 7.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.60...11.70

Del.quantity cm<sup>3</sup>/ : 7.6...7.7

100 s: (7.4...7.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm<sup>3</sup>/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del.quantity : 76.5...77.5

1000 : (74.5...79.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever  
position degrees: 104...112

Testing:

1st rack travel in: 9.50  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1390...1420  
3rd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1570  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 10.50...10.60  
2nd speed rpm : 500  
Rack travel in m: 11.80...11.90  
4th speed rpm : 1070  
Rack travel in m: 11.10...11.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.60...11.70

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.10...10.30  
2nd pressure hPa : 160  
Rack travel in m: 10.70...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 1290  
Del.quantity cm<sup>3</sup>/ : 73.0...75.0  
1000 s: (70.5...77.5)  
Aneroid pressure h: -

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 50.5...51.5  
1000 s: (48.5...53.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del.quantity cm<sup>3</sup>/ : 6.0...10.0  
1000 s: (3.5...12.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 o16  
 Edition : 22.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 392  
 Injection pump  
 Pump designation : PES6A95D32ORS2693Z  
 EP type number : 0 410 896 913  
 Governor  
 Governor design. : RSV300...1300AOC2248  
 -2R  
 Governor no. : 0 420 233 274

Customer-spec. information  
 Customer : DAF

Engine : NS156

1st version kW : 156.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.90...12.00

Del. quantity cm<sup>3</sup>/ : 8.5...8.6

100 s: (8.3...8.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del. quantity cm<sup>3</sup>/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del. quantity : 85.5...86.5

1000 : (83.5...88.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever  
position degrees: 107...115

Testing:

1st rack travel in: 10.70  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
3rd rack travel in: 4.00  
Speed rpm : 1430...1460  
4th rack travel in: 1570  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever  
position degrees: 74...82  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 570...630

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 11.70...11.80  
2nd speed rpm : 500  
Rack travel in m: 12.20...12.40  
4th speed rpm : 1000  
Rack travel in m: 11.80...12.00

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.90...12.00

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.20...10.40  
2nd pressure hPa : 290  
Rack travel in m: 11.50...11.60  
3rd pressure hPa : 250  
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1290  
Del.quantity cm3/ : 87.0...89.0  
1000 s: (84.5...91.5)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 54.0...55.0  
1000 s: (52.0...57.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del.quantity cm3/ : 6.0...10.0  
1000 s: (3.5...12.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 w 6  
 Edition : 22.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 394  
 Injection pump  
 Pump designation : PES6A100D410RS2754  
 EP type number : 0 410 806 002  
 Governor  
 Governor design. : RSV425...1100AOC2234  
 -2L  
 Governor no. : 0 420 232 569

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6076TRW04

1st version kW : 122.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness : 6.00X2.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.60...10.70

Del.quantity cm<sup>3</sup>/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup>/ : 2.6...3.0

100 s: (2.4...3.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 100.5...102.5

1000 : (98.5...104.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 9.60  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1200...1210  
3rd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.80...6.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.60...10.70  
2nd speed rpm : 700  
Rack travel in m: 11.80...12.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 125.0...128.0  
1000 s: (122.5...130.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 26.0...30.0  
1000 s: (24.0...32.0)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE51026  
Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAO 20,9 a  
 Edition : 18.12.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 840 110  
 Injection pump  
 Pump designation : PE12P120A520/4LS859  
 EP type number : 0 411 820 037  
 Governor  
 Governor design. : RQ900PA663-9  
 Governor no. : 0 421 801 577

Customer-spec. information  
 Customer : DAEWOO

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 105  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.00...3.10  
 : (2.95...3.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 1- 5- 9- 8- 3-  
 : 4- 11- 10- 2- 6- 7

J02

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 850  
 Rack travel in mm : 8.00...8.10  
 Del. quantity cm<sup>3</sup>/ : 16.9...17.1  
 100 s: (16.6...17.4)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)  
 2nd speed rpm : 250.0  
 Rack travel in mm : 5.0...5.4  
 Del. quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Del. quantity : 169.0...171.0  
 1000 : (166.0...174.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Testing:  
 1st rack travel in: 9.00  
 Speed rpm : 900...905  
 2nd rack travel in: 4.00  
 Speed rpm : 932...946  
 4th rack travel in: 1000  
 Speed rpm : 0.00...1.00

BREAKAWAY

1st version  
 1mm rack travel less than  
 full load rack tr: 9.00  
 Speed rpm : 900...905



Remarks:

:

APPLICATION

Generator set



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 20,9 y  
 Edition : 18.08.89  
 Replaces : 12.9.86  
 Test oil : ISO-4113

Combination no. : 0 401 840 760

Injection pump  
 Pump designation : PE12P120A520/4LS3841  
 EP type number : 0 411 820 725  
 Governor  
 Governor design. : RQ750PA663-7  
 Governor no. : 0 421 801 331

Customer-spec. information  
 Customer : MAN

Engine : D2842LE

1st version kW : 380.0  
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30  
 : (4.15...4.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 : 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 : 180-225-240-285-300-

Phasing : 345  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.10...13.20

Del.quantity cm<sup>3</sup>/ : 21.5...21.7

100 s : (21.2...22.0)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s : (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 215.0...217.0

1000 : (212.0...220.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: -

Testing:

1st rack travel in: 12.10

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 797...810

4th rack travel in: 950

Speed rpm : 0.00...1.00

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 165.0...185.0  
1000 s: (161.0...189.0)

Remarks:  
: MAN-NR. 2-7828

APPLICATION

Generator set



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 21,0 c  
 Edition : 20.12.91  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 840 771

Injection pump  
 Pump designation : PE12P120A520/4LS3854  
 EP type number : 0 411 820 728  
 Governor  
 Governor design. : RQ950PA664-3  
 Governor no. : 0 421 801 629

Customer-spec. information  
 Customer : MAN

Engine : D2842LE

1st version kW : 443.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30  
 : (4.15...4.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 : 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 : 180-225-240-285-300-  
 Phasing : 345  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm<sup>3</sup>/ : 25.0...25.2

100 s: (24.7...25.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.9...7.1

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 250.0...252.0

1000 : (247.0...255.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: -

Testing:

1st rack travel in: 12.00

Speed rpm : 1020...1030

2nd rack travel in: 4.00

Speed rpm : 1070...1100

4th rack travel in: 1400

Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 1020...1030

Remarks:

:

APPLICATION

Generator set



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 b5  
 Edition : 20.12.91  
 Replaces : 6.4.88  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 286V  
 Injection pump  
 Pump designation : PE6P100A320RS100V  
 EP type number : 0 411 806 123  
 Governor  
 Governor design. : RQV250...1100PA232/2  
 R  
 Governor no. : 0 421 813 134

Customer-spec. information  
 Customer : VOLVO-TRUCK

Engine : T(H)D 100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 004

Outside diameter  
 x Wall thickness : 6.00x1.50x600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 13.00...13.10  
 Del.quantity cm<sup>3</sup>/ : 14.5...14.7  
 100 s : (14.3...14.9)  
 Spread cm<sup>3</sup> : 0.4  
 100 s : (0.6)

2nd speed rpm : 250.0  
 Rack travel in mm : 5.9...6.1  
 Del.quantity cm<sup>3</sup>/ : 1.1...1.5  
 100 s : (0.8...1.7)  
 Spread cm<sup>3</sup> : 0.2  
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1100  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 500  
 Del.quantity : 145.0...147.0  
 1000 : (143.0...149.0)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 43...51

Testing:  
 1st rack travel in: 12.00  
 Speed rpm : 1140...1150  
 2nd rack travel in: 4.00  
 Speed rpm : 1230...1260  
 4th rack travel in: 1350  
 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 8...16

Testing:

Speed rpm : 100  
Minimum rack travel: 7.60  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 320...380

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : 500  
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.80...11.00  
2nd pressure hPa : 240  
Rack travel in m: 12.70...12.90  
3rd pressure hPa : 80  
Rack travel in m: 11.20...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 105.0...107.0  
1000 s: (103.0...109.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1140...1150

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Del.quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (8.5...17.5)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (5.00)

Remarks:

:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 13,8 b  
 Edition : 29.11.91  
 Replaces : 3.83  
 Test oil : ISO-4113

Combination no. : 0 401 846 486

Injection pump  
 Pump designation : PE6P120A72ORS214  
 EP type number : 0 411 826 060  
 Governor  
 Governor design. : RQV425...1100PA438-2  
 Governor no. : 0 421 813 376

Customer-spec. information  
 Customer : IVECO-UNIC

Engine : 8215.02.542

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.50...9.60

Del.quantity cm<sup>3</sup>/ : 14.9...15.1  
 100 s: (14.6...15.4)

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 425.0  
 Rack travel in mm : 5.4...5.8  
 Del.quantity cm<sup>3</sup>/ : 1.5...2.1  
 100 s: (1.2...2.4)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145  
 travel mm : 8.50...8.70

2nd speed rpm : 425  
 travel mm : 1.10...1.50

3rd speed rpm : 600  
 travel mm : 3.90...4.50

4th speed rpm : 850  
 travel mm : 6.00...6.40

5th speed rpm : 1450  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1130  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100  
 Del.quantity : 149.0...151.0  
 1000 : (146.0...154.0)

Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)



## RATED SPEED

1st version

Control lever

position degrees: 111...119

Testing:

1st rack travel in: 8.50

Speed rpm : 1160...1170

2nd rack travel in: 4.00

Speed rpm : 1230...1260

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 63...71

Testing:

Speed rpm : 100

Minimum rack travel: 7.10

Speed rpm : 425

Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

Speed rpm : 425...525

TORQUE CONTROL

Dimension a mm : 0.90

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 9.50...9.60

2nd speed rpm : 800

Rack travel in m: 10.40...10.50

3rd speed rpm : 1000

Rack travel in m: 10.00...10.10

4th speed rpm : 900

Rack travel in m: 10.20...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800

Del. quantity cm<sup>3</sup>/ : 155.0...159.0

1000 s: (152.0...162.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.50

Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 19.50...21.00

Remarks:

:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 b 4  
 Edition : 05.11.90  
 Replaces : 1.2.90  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 497  
 Injection pump  
 Pump designation : PE6P120A32ORS438-1  
 EP type number : 0 411 826 133  
 Governor  
 Governor design. : RQV275...1200PA648-2  
 Governor no. : 0 421 813 490

Customer-spec. information  
 Customer : RVI

Engine : MIDS062030

1st version kw : 150.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Del.quantity cm<sup>3</sup>/ : 13.3...13.5

100 s: (13.0...13.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 3.6...3.8

Del.quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (1.2...2.4)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 3.30...4.00

3rd speed rpm : 850

travel mm : 5.90...6.20

4th speed rpm : 1200

travel mm : 8.20...8.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1200

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 133.0...135.0

1000 : (130.0...138.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Setting point:  
Speed rpm : 1200  
Rack travel in mm : 16.5

Testing:  
1st rack travel in: -1.00  
Speed rpm : 1265...1275  
2nd rack travel in: -6.20  
Speed rpm : 1355...1385  
4th rack travel in: 1500  
Speed rpm : -9.20...-10.2

LOW IDLE 1  
Control lever  
position degrees: 64...72  
Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 3.7

Testing:  
Speed rpm : 100  
Speed rpm : 275  
Rack travel in mm : -3.60...-3.80  
Speed rpm : 200  
Maximum rack trave: -1.40

CONSTANT REGULATION  
Speed rpm : 275...360

START CUT-OUT

Speed 1/min : 215 (235)

FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm3/ : 116.0...122.0  
1000 s: (113.0...125.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: -1.00  
Speed rpm : 1265...1275

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 105.0...125.0  
1000 s: (101.0...129.0)

LOW IDLE

Speed rpm : 275  
Rack travel in mm : -3.60...-3.80  
Del.quantity cm3/ : 15.0...21.0  
1000 s: (12.0...24.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

Start-of-delivery mark at the "INJ"  
marking

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,6 b 1
Edition : 02.12.91
Replaces : 10.85
Test oil : ISO-4113
Combination no. : 0 401 846 508
Injection pump
Pump designation : PE6P100A720RS473
EP type number : 0 411 806 196
Governor
Governor design. : RQV300...1100PA741
Governor no. : 0 421 813 473

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 355

1st version kW : 177.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...0

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 12.5...12.7

100 s: (12.3...12.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1160

travel mm : 8.70...8.90

2nd speed rpm : 300

travel mm : 1.20...1.70

3rd speed rpm : 600

travel mm : 3.80...4.30

4th speed rpm : 800

travel mm : 5.40...5.90

5th speed rpm : 1000

travel mm : 6.80...7.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 125.0...127.0  
1000 : (123.0...129.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks: :

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

Testing:  
1st rack travel in: 12.10  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 17...25

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.70  
Speed rpm : 300  
Rack travel in mm : 8.00...8.20

CONSTANT REGULATION  
Speed rpm : 300...500

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 117.0...121.0  
1000 s: (114.5...123.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.10  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6 y2  
 Edition : 29.11.91  
 Replaces : 1.7.88  
 Test oil : ISO-4113

Combination no. : 0 401 846 511

Injection pump  
 Pump designation : PE6P120A320RS415-1  
 EP type number : 0 411 826 123  
 Governor  
 Governor design. : RQ250/1000PA417-4  
 Governor no. : 0 421 801 287

Customer-spec. information  
 Customer : DAF

Engine : DKZ 1160

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.50...12.60

Del.quantity cm<sup>3</sup>/ : 20.6...20.8

100 s: (20.3...21.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.7...6.9

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del.quantity : 206.0...208.0

1000 : (203.0...211.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 16.0

Testing:

1st rack travel in: 11.50

Speed rpm : 1035...1050

2nd rack travel in: 4.00

Speed rpm : 1100...1130

4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.5

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.40  
Speed rpm : 250  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 450...490

TORQUE CONTROL  
Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 13.50...13.60  
2nd speed rpm : 990  
Rack travel in m: 13.40...13.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 12.50...12.60

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.30...10.50  
2nd pressure hPa : 340  
Rack travel in m: 11.80...11.90  
3rd pressure hPa : 280  
Rack travel in m: 10.60...11.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 140.0...142.0  
1000 s: (137.0...145.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 1035...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 305.0...345.0  
1000 s: (305.0...345.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.40...6.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6 y1  
 Edition : 18.12.91  
 Replaces : 10.85  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 512  
 Injection pump  
 Pump designation : PE6P120A32ORS415-1  
 EP type number : 0 411 826 123  
 Governor  
 Governor design. : RQ250/1100PA417R  
 Governor no. : 0 421 801 084

Customer-spec. information  
 Customer : DAF

Engine : DKX 1160

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance \* - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850  
 Rack travel in mm : 11.60...11.70  
 Del.quantity cm<sup>3</sup>/ : 18.7...18.9  
 100 s: (18.4...19.2)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.7...6.9  
 Del.quantity cm<sup>3</sup>/ : 1.4...2.0  
 100 s: (1.1...2.3)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 700  
 Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 700  
 Del.quantity : 187.0...189.0  
 1000 : (184.0...192.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 700  
 Rack travel in mm : 16.0

Testing:  
 1st rack travel in: 10.60  
 Speed rpm : 1125...1140  
 2nd rack travel in: 4.00  
 Speed rpm : 1190...1220  
 4th rack travel in: 1300  
 Speed rpm : 0.00...1.00



LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.5

Testing:

Speed rpm : 100

Minimum rack trave: 7.40

Speed rpm : 250

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 450...490

TORQUE CONTROL

Dimension a mm : 0.55

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 12.60...12.70

2nd speed rpm : 1080

Rack travel in m: 12.50...12.70

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 700

Rack travel mm : 11.60...11.70

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.30...10.50

2nd pressure hPa : 300

Rack travel in m: 11.30...11.40

3rd pressure hPa : 250

Rack travel in m: 10.60...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 140.0...142.0

1000 s: (137.0...145.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

Speed rpm : 1125...1140

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 305.0...345.0

1000 s: (305.0...345.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.40...6.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 c  
 Edition : 29.11.91  
 Replaces : 13.12.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 547

Injection pump  
 Pump designation : PE6P110A820LS513  
 EP type number : 0 411 816 174  
 Governor  
 Governor design. : RQV250...1000PA811  
 Governor no. : 0 421 813 556

Customer-spec. information  
 Customer : ENASA

Engine : 95 R1 AX

1st version kW : 184.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.00...13.10

Del.quantity cm<sup>3</sup>/ : 17.9...18.1

100 s: (17.6...18.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...6.8

Del.quantity cm<sup>3</sup>/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 400  
 travel mm : 2.20...2.80

3rd speed rpm : 650  
 travel mm : 4.50...5.10

4th speed rpm : 1050  
 travel mm : 8.50...8.70

5th speed rpm : 1140  
 travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 179.0...181.0

1000 : (176.0...184.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 11.60  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 81...89

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.20  
Speed rpm : 250  
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION  
Speed rpm : 250...480

TORQUE CONTROL  
Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 600  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 980  
Rack travel in m: 12.60...12.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.00...13.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.40...10.80  
2nd pressure hPa : 580  
Rack travel in m: 12.40...12.50  
3rd pressure hPa : 375  
Rack travel in m: 11.20...11.40

START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 980  
Del.quantity cm<sup>3</sup>/ : 170.0...174.0  
1000 s: (167.0...177.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 124.0...126.0  
1000 s: (121.0...129.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.60  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 12,0 a
Edition : 29.11.91
Replaces : 1.12.89
Test oil : ISO-4113
Combination no. : 0 401 846 548
Injection pump
Pump designation : PE6P120A32ORS257
EP type number : 0 411 826 075
Governor
Governor design. : RQ250/1100PA877
Governor no. : 0 421 801 409

Customer-spec. information
Customer : ENASA

Engine : 96T1AZ

1st version kW : 228.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 18.4...18.6

100 s: (18.1...18.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.40...16.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 184.0...186.0

1000 : (181.0...189.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 16.0

Testing:

1st rack travel in: 9.60

Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.6

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.10  
Speed rpm : 250  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 600  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 1080  
Rack travel in m: 10.60...10.80  
3rd speed rpm : 720  
Rack travel in m: 10.80...11.00

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 10.90...11.00

#### Measurement

Speed 1/min : 500  
1st pressure hPa : -  
Rack travel in m: 8.70...9.10  
2nd pressure hPa : 340  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 470  
Rack travel in m: 10.10...10.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 1080  
Del.quantity cm<sup>3</sup>/ : 198.0...204.0  
1000 s: (195.0...207.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 130.0...132.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 e2  
 Edition : 29.11.91  
 Replaces : 19.2.91  
 Test oil : ISO-4113

Combination no. : 0 401 846 552

Injection pump  
 Pump designation : PE6P100A820LS503  
 EP type number : 0 411 806 197  
 Governor  
 Governor design. : RQ250/1000PA352-1  
 Governor no. : 0 421 801 412

Customer-spec. information  
 Customer : ENASA

Engine : 95 TE DY

1st version kw : 155.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.10...14.20

Del.quantity cm<sup>3</sup>/ : 16.0...16.2

100 s: (15.8...16.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.8...8.0

Del.quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 16.00...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 160.0...162.0

1000 : (158.0...164.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.6

Testing:

1st rack travel in: 12.70

Speed rpm : 1045...1060

2nd rack travel in: 4.00

Speed rpm : 1100...1130

4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 350...390

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 700  
Rack travel in m: 14.10...14.20  
2nd speed rpm : 980  
Rack travel in m: 13.70...13.90

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 14.10...14.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.90...13.30  
2nd pressure hPa : 355  
Rack travel in m: 13.80...13.90  
3rd pressure hPa : 300  
Rack travel in m: 13.40...13.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 980  
Del. quantity cm<sup>3</sup>/ : 154.0...158.0  
1000 s: (152.0...160.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 130.0...132.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 1045...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

#### Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 a3  
 Edition : 29.11.91  
 Replaces : 14.9.90  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 563  
 Injection pump  
 Pump designation : PE6P120A32ORS257  
 EP type number : 0 411 826 075  
 Governor  
 Governor design. : RQV250...1050PA808-3  
 Governor no. : 0 421 813 812

Customer-spec. information  
 Customer : ENASA

Engine : 96 T1 CX  
 1st version kw : 228.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 650  
 Rack travel in mm : 10.40...10.50  
 Del. quantity cm<sup>3</sup>/ : 17.9...18.1  
 100 s: (17.6...18.4)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 5.6...5.8  
 Del. quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 350  
 travel mm : 1.90...2.50  
 3rd speed rpm : 700  
 travel mm : 4.50...5.10  
 4th speed rpm : 1095  
 travel mm : 8.00...8.20  
 5th speed rpm : 1185  
 travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1110  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 650  
 Aneroid pressure h: 900



Del.quantity : 179.0...181.0  
1000 : (176.0...184.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control Lever  
position degrees: 114...122

Testing:  
1st rack travel in: 9.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control Lever  
position degrees: 78...86

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.20  
Speed rpm : 250  
Rack travel in mm : 5.60...5.80

#### CONSTANT REGULATION

Speed rpm : 250...450

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 10.40...10.50

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.70...9.10  
2nd pressure hPa : 585  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 465  
Rack travel in m: 9.40...9.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1030  
Del.quantity cm3/ : 191.0...197.0  
1000 s: (188.0...200.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 130.0...132.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 a6  
 Edition : 30.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 563D  
 Injection pump  
 Pump designation : PE6P120A32ORS257  
 EP type number : 0 411 826 075  
 Governor  
 Governor design. : RQV250...1050PA808-3  
 Governor no. : 0 421 813 812

Customer-spec. information  
 Customer : ENASA

Engine : 96 T1 CW

1st version kW : 206.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 17.5...17.7

100 s : (17.2...18.0)

Spread cm3 : 0.5

100 s : (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.7...2.3

100 s : (1.4...2.6)

Spread cm3 : 0.8

100 s : (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 350

travel mm : 1.90...2.50

3rd speed rpm : 700

travel mm : 4.50...5.10

4th speed rpm : 1095

travel mm : 8.00...8.20

5th speed rpm : 1185

travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 900

Del.quantity : 175.0...177.0  
1000 : (172.0...180.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 9.20  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1330  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 78...86

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.20  
Speed rpm : 250  
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION  
Speed rpm : 250...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 10.20...10.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.30...8.70  
2nd pressure hPa : 460  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 280  
Rack travel in m: 9.10...9.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1080  
Del.quantity cm<sup>3</sup>/ : 186.0...192.0  
1000 s: (183.0...195.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 119.0...121.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.20  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)  
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,0 i2  
 Edition : 19.03.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 773  
 Injection pump  
 Pump designation : PE6P12DA32ORS3116  
 EP type number : 0 411 826 727  
 Governor  
 Governor design. : RQV250...1025PA921  
 Governor no. : 0 421 813 783

Customer-spec. information  
 Customer : VOLVO

Engine : TD121G

1st version kW : 243.0  
 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.40...11.50

Del. quantity cm<sup>3</sup>/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 5.5...5.7  
 Del. quantity cm<sup>3</sup>/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.10...1.30

2nd speed rpm : 500  
 travel mm : 4.10...4.90

3rd speed rpm : 700  
 travel mm : 6.30...6.70

4th speed rpm : 900  
 travel mm : 6.30...6.70

5th speed rpm : 1025  
 travel mm : 7.30...7.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 700

Del.quantity : 196.5...198.5  
1000 : (193.5...201.5)  
Spread cm<sup>3</sup> : 5.00  
1000 : (7.00)

#### RATED SPEED

1st version  
Control Lever  
position degrees: 59...67

#### Testing:

1st rack travel in: 10.40  
Speed rpm : 1085...1095  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control Lever  
position degrees: 6...14

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 250  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 350...410

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.40...11.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.10  
2nd pressure hPa : 450  
Rack travel in m: 11.20...11.30  
3rd pressure hPa : 170  
Rack travel in m: 9.30...9.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 151.0...153.0  
1000 s: (148.0...156.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1085...1095

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...270.0  
1000 s: (236.0...274.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 18.0...23.0  
1000 s: (15.5...25.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

#### Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,0 f6  
 Edition : 20.12.91  
 Replaces : 4.86  
 Test oil : ISO-4113  
 Combination no. : J 401 846 7E0E  
 Injection pump  
 Pump designation : PE6P120A32ORS3071E  
 EP type number : 0 411 826 713  
 Governor  
 Governor design. : RQV300...1050PA371-1  
 Governor no. : 0 421 813 412

Customer-spec. information  
 Customer : VOLVO

Engine : TD 1206BM

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00

K04

Firing order : 1- 5- 3- 6- 2- 4  
 Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 11.80...11.90  
 Del.quantity cm<sup>3</sup>/ : 20.0...20.2  
 100 s : (19.7...20.5)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)  
 2nd speed rpm : 300.0  
 Rack travel in mm : 5.3...5.5  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.1  
 100 s : (1.5...2.3)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.40...1.70  
 2nd speed rpm : 450  
 travel mm : 2.30...2.70  
 3rd speed rpm : 550  
 travel mm : 3.30...3.80  
 4th speed rpm : 1090  
 travel mm : 7.80...8.00  
 5th speed rpm : 1160  
 travel mm : 8.50...8.80

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1140  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h : 1200  
 Del.quantity : 200.5...202.5  
 1000 : (197.5...205.5)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 39...47

Testing:  
1st rack travel in: 10.80  
Speed rpm : 1105...1115  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1325  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.80  
Speed rpm : 300  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.00  
Speed rpm : 380...440

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 11.80...11.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.40...9.50  
2nd pressure hPa : 910  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 400  
Rack travel in m: 9.60...9.80

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 152.5...154.5  
1000 s: (149.5...157.5)

BREAKAWAY

K05

1st version  
1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1105...1115

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.30...5.50  
Del.quantity cm<sup>3</sup>/ : 17.0...21.0  
1000 s: (15.0...23.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 8,0 i 2  
 Edition : 20.12.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 790  
 Injection pump  
 Pump designation : PE6P110A720RS3034  
 EP type number : 0 411 816 711  
 Governor  
 Governor design. : RQV275...1200PA554-1  
 Governor no. : 0 421 813 430

Customer-spec. information  
 Customer : SCANIA

Engine : DS8 05

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40  
 : (3.25...3.45)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.80...12.90

Del.quantity cm<sup>3</sup>/ : 12.1...12.3

100 s: (11.9...12.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 5.5...5.7

Del.quantity cm<sup>3</sup>/ : 1.5...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1220

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 121.0...123.0

1000 : (119.0...125.0)

Spread cm<sup>3</sup> : 5.00

1000 : (7.00)

RATED SPEED

1st version

Control lever

position degrees: 59...67

Testing:

1st rack travel in: 11.80

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1335...1365

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever



position degrees: 6...14

Testing:

Speed rpm : 100  
Minimum rack travel : 7.00  
Speed rpm : 275  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 350...410

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in mm : 11.60...11.70  
2nd pressure hPa : 330  
Rack travel in mm : 12.50...12.60  
3rd pressure hPa : 220  
Rack travel in mm : 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h : 900  
Speed rpm : 1200  
Del. quantity cm<sup>3</sup>/ : 126.5...131.5  
1000 s : (124.0...134.0)  
Aneroid pressure h : -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 85.0...89.0  
1000 s : (83.0...91.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack travel : 11.80  
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 190.0...240.0  
1000 s : (-)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.50...5.70  
Del. quantity cm<sup>3</sup>/ : 15.0...20.0  
1000 s : (13.0...22.0)  
Spread cm<sup>3</sup> : 2.00  
1000 s : (4.00)

Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

ADDITIONAL INFORMATION

Check and set without RO80 diaphragm

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over  
on Nov. 2, 1983

Engine start of delivery: 18° BTDC

Firing sequence of engine:  
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 u1  
 Edition : 20.12.91  
 Replaces : 4.11.88  
 Test oil : ISO-4113

Combination no. : 0 401 846 850E

Injection pump  
 Pump designation : PE6P110A32ORS3197  
 EP type number : 0 411 816 752  
 Governor  
 Governor design. : RQV300...1100PA232-3  
 Governor no. : 0 421 813 639

Customer-spec. information  
 Customer : VME

Engine : TD102 KBE

1st version kW : 194.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00

K08

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.50...12.60

Del.quantity cm<sup>3</sup>/ : 16.9...17.1

100 s: (16.6...17.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 3.9...4.1

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.40...1.60

2nd speed rpm : 350  
 travel mm : 1.70...2.30

3rd speed rpm : 700  
 travel mm : 4.40...5.00

4th speed rpm : 1165  
 travel mm : 8.70...8.90

5th speed rpm : 1255  
 travel mm : 9.60...10.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 169.0...171.0

1000 : (166.0...174.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 109...117

Testing:  
1st rack travel in: 11.50  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 75...83

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.50  
Speed rpm : 300  
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION  
Speed rpm : 300...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.50...12.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.20...9.40  
2nd pressure hPa : 655  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 255  
Rack travel in m: 9.60...9.80

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 115.0...117.0  
1000 s: (112.0...120.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...190.0  
1000 s: (146.0...194.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 3.90...4.10  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

Remarks:

#### APPLICATION

Loading machine

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 e5  
 Edition : 20.12.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 854HD  
 Injection pump  
 Pump designation : PE6P120A32ORS3118-1  
 EP type number : 0 411 826 739  
 Governor  
 Governor design. : RQV250...850PA921-12  
 Governor no. : 0 421 813 795

Customer-spec. information  
 Customer : VOLVO-TRUCK

Engine : TD122FCQ

1st version kW : 287.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700  


---

 Rack travel in mm : 12.30...12.40  


---

 Del.quantity cm<sup>3</sup>/ : 21.4...21.6  


---

 100 s: (21.1...21.9)  


---

 Spread cm<sup>3</sup> : 0.5  


---

 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 3.3...3.5  
 Del.quantity cm<sup>3</sup>/ : 1.8...2.3  
 100 s: (1.5...2.5)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 350  
 travel mm : 2.20...2.80  
 3rd speed rpm : 700  
 travel mm : 6.40...6.60  
 4th speed rpm : 885  
 travel mm : 7.60...7.80  
 5th speed rpm : 955  
 travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 930  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 900

Del.quantity : 214.5...216.5  
1000 : (211.5...219.5)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 112...120

Testing:  
1st rack travel in: 11.30  
Speed rpm : 880...890  
2nd rack travel in: 4.00  
Speed rpm : 990...970  
4th rack travel in: 1100  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 59...67

Testing:  
Speed rpm : 100  
Minimum rack travel: 4.80  
Speed rpm : 250  
Rack travel in mm : 3.30...3.50

CONSTANT REGULATION  
Speed rpm : 250...350

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.30...12.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.20...9.40  
2nd pressure hPa : 80  
Rack travel in m: 9.60...9.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 154.0...156.0  
1000 s: (151.0...159.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 880...890

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...280.0  
1000 s: (236.0...284.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.30...3.50  
Del.quantity cm<sup>3</sup>/ : 18.0...23.0  
1000 s: (15.5...25.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

#### Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 c  
 Edition : 29.11.91  
 Replaces : 27.5.91  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 860  
 Injection pump  
 Pump designation : PE6P120A32ORS3200  
 EP type number : 0 411 826 766  
 Governor  
 Governor design. : RQV250...1000PA808-1  
 Governor no. : 0 421 813 660

Customer-spec. information  
 Customer : ENASA

Engine : 96 R1 BX

1st version kW : 265.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
 : (3.75...3.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 11.90...12.00

Del. quantity cm<sup>3</sup>/ : 24.9...25.1

100 s: (24.6...25.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 3.3...3.7

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 350

travel mm : 2.10...2.60

3rd speed rpm : 700

travel mm : 4.70...5.30

4th speed rpm : 1055

travel mm : 7.90...8.10

5th speed rpm : 1145

travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1200

Del. quantity : 249.0...251.0  
1000 : (246.0...254.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 115...123

Testing:  
1st rack travel in: 10.90  
Speed rpm : 1050...1060  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 73...81

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.00  
Speed rpm : 250  
Rack travel in mm : 3.30...3.70

CONSTANT REGULATION  
Speed rpm : 250...330

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 11.90...12.00

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 7.70...8.10  
2nd pressure hPa : 680  
Rack travel in m: 11.00...11.10  
3rd pressure hPa : 420  
Rack travel in m: 9.20...9.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 900  
Del. quantity cm<sup>3</sup>/ : 244.0...250.0  
1000 s: (241.0...253.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 130.0...132.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.90  
Speed rpm : 1050...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 155.0...175.0  
1000 s: (151.0...179.0)  
Rack travel in mm : 19.50...21.00

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 e  
 Edition : 29.11.91  
 Replaces : 1.12.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 861  
 Injection pump  
 Pump designation : PE6P120A32ORS3176-1  
 EP type number : 0 411 826 767  
 Governor  
 Governor design. : RQV250...1050PA808  
 Governor no. : 0 421 813 553

Customer-spec. information  
 Customer : ENASA

Engine : 96 R1 AX  
 1st version kW : 250.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
 : (3.75...3.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 650  
 Rack travel in mm : 12.40...12.50  
 Del.quantity cm<sup>3</sup>/ : 21.2...21.4  
 100 s : (20.9...21.7)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 4.2...4.4  
 Del.quantity cm<sup>3</sup>/ : 2.5...3.1  
 100 s : (2.2...3.4)  
 Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 350  
 travel mm : 1.90...2.50  
 3rd speed rpm : 700  
 travel mm : 4.50...5.10  
 4th speed rpm : 1095  
 travel mm : 8.00...8.20  
 5th speed rpm : 1185  
 travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1110  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 650  
 Aneroid pressure h: 900



Del. quantity : 212.0...214.0  
1000 : (209.0...217.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 115...123

Testing:  
1st rack travel in: 11.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 76...84

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 250  
Rack travel in mm : 4.20...4.40

CONSTANT REGULATION  
Speed rpm : 250...350

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.40...12.50

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.30  
2nd pressure hPa : 390  
Rack travel in m: 11.50...11.60  
3rd pressure hPa : 160  
Rack travel in m: 10.10...10.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1030  
Del. quantity cm<sup>3</sup>/ : 215.0...221.0  
1000 s: (212.0...224.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 130.0...132.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 155.0...175.0  
1000 s: (151.0...179.0)  
Rack travel in mm : 19.50...21.00

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 13,8 f  
 Edition : 08.10.91  
 Replaces : 2.1.90  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 891  
 Injection pump  
 Pump designation : PE6P120A720RS3216  
 EP type number : 0 411 826 781  
 Governor  
 Governor design. : RQV300...975PA898K  
 Governor no. : 0 421 815 197

Customer-spec. information  
 Customer : IVECO-UNIC

Engine : 8210.42.269

1st version kW : 261.0  
 Rated speed : 1950

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 12.80...12.90

Del.quantity cm<sup>3</sup>/ : 23.5...23.7

100 s: (23.2...24.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.4...4.6

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.60...2.00

2nd speed rpm : 400  
 travel mm : 3.20...4.00

3rd speed rpm : 750  
 travel mm : 6.70...7.10

4th speed rpm : 975  
 travel mm : 9.60...9.80

5th speed rpm : 1200  
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1015

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975

Aneroid pressure h: 1200

Del. quantity : 235.0...237.0  
1000 : (232.0...240.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control Lever  
position degrees: 115...123

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1015...1025  
2nd rack travel in: 4.00  
Speed rpm : 1085...1115  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 71...79

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.00  
Speed rpm : 300  
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION  
Speed rpm : 280...400

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 975  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 830  
Rack travel in m: 12.40...12.60  
3rd speed rpm : 500  
Rack travel in m: 11.30...11.50  
4th speed rpm : 350  
Rack travel in m: 11.20...11.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 975  
Pressure hPa : 1200  
Rack travel mm : 12.80...12.90

Measurement  
Speed 1/min : 975

1st pressure hPa : -  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 600

K17

Rack travel in m: 11.40...11.50  
3rd pressure hPa : 400  
Rack travel in m: 10.10...10.30

#### START CUT-OUT

Speed 1/min : 240 (260)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 185.0...191.0  
1000 s: (182.0...194.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 131.0...133.0  
1000 s: (128.0...136.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1015...1025

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 d  
 Edition : 29.11.91  
 Replaces : 22.3.91  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 900  
 Injection pump  
 Pump designation : PE6P120A320RS3240  
 EP type number : 0 411 826 786  
 Governor  
 Governor design. : RQV250...1025PA921  
 -16  
 Governor no. : 0 421 813 799

Customer-spec. information  
 Customer : VOLVO-TRUCK

Engine : TD122FL

1st version kW : 298.0  
 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 457 413 010  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 1 688 901 019  
 Opening pressure, bar : 207...210  
 Orifice plate diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 13.60...13.70  
 Del.quantity cm<sup>3</sup>/ : 25.1...25.3  
 100 s: (24.8...25.6)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.5...6.7  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.2  
 100 s: (1.5...2.5)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL  
 1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 450  
 travel mm : 3.60...4.20  
 3rd speed rpm : 800  
 travel mm : 6.30...6.70  
 4th speed rpm : 1070  
 travel mm : 8.00...8.20  
 5th speed rpm : 1150  
 travel mm : 9.30...9.70

GUIDE SLEEVE POSITION  
 Control-lever position  
 Degree: -1  
 Speed rpm : 1100  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700

Aneroid pressure h: 1200  
Del.quantity : 251.0...253.0  
1000 : (248.0...256.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 12.60  
Speed rpm : 1065...1075  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 60...68

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.10  
Speed rpm : 250  
Rack travel in mm : 6.50...6.70

#### CONSTANT REGULATION

Speed rpm : 250...380

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.60...13.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.10  
2nd pressure hPa : 90  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 800  
Rack travel in m: 13.30...13.50

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700

Del.quantity cm<sup>3</sup>/ : 154.0...156.0  
1000 s: (151.0...159.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.60  
Speed rpm : 1065...1075

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 270.0...310.0  
1000 s: (266.0...314.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.50...6.70  
Del.quantity cm<sup>3</sup>/ : 17.5...22.5  
1000 s: (15.0...25.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

#### Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

Start-of-delivery setting with RO80  
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 d1  
 Edition : 29.11.91  
 Replaces : 5.7.91  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 901  
 Injection pump  
 Pump designation : PE6P120A32ORS3240-1  
 EP type number : 0 411 826 787  
 Governor  
 Governor design. : SQV250...950PA921-17  
 Governor no. : 0 421 813 800

Customer-spec. information  
 Customer : VOLVO-TRUCK

Engine : TD122FH

1st version kW : 269.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.70...12.80

Del.quantity cm<sup>3</sup>/ : 22.3...22.5

100 s: (22.0...22.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.5...6.7

Del.quantity cm<sup>3</sup>/ : 1.7...2.2

100 s: (1.5...2.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 450  
 travel mm : 3.60...4.20

3rd speed rpm : 700  
 travel mm : 6.30...6.70

4th speed rpm : 985  
 travel mm : 8.10...8.30

5th speed rpm : 1060  
 travel mm : 9.40...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1030

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 223.0...225.0  
1000 : (220.0...228.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 11.70  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 60...68

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.10  
Speed rpm : 250  
Rack travel in mm : 6.50...6.70

#### CONSTANT REGULATION

Speed rpm : 250...380

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.70...12.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.10  
2nd pressure hPa : 90  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 470  
Rack travel in m: 12.40...12.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 154.0...156.0  
1000 s: (151.0...159.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 270.0...310.0  
1000 s: (266.0...314.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.50...6.70  
Del.quantity cm<sup>3</sup>/ : 17.5...22.5  
1000 s: (15.0...25.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

Start-of-delivery setting with ROBO  
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 y  
 Edition : 29.11.91  
 Replaces : 6.10.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 902

Injection pump  
 Pump designation : PE6P110A32ORS3080-4  
 EP type number : 0 411 816 766  
 Governor  
 Governor design. : RQV250...1025PA921  
 -18  
 Governor no. : 0 421 813 801

Customer-spec. information  
 Customer : VOLVO-TRUCK

Engine : TD102FL

1st version kW : 239.0  
 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417-413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.40...13.50

Del.quantity cm<sup>3</sup>/ : 19.6...19.8

100 s: (19.4...20.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 3.8...4.0

Del.quantity cm<sup>3</sup>/ : 1.5...1.9

100 s: (1.2...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 350  
 travel mm : 2.20...2.80

3rd speed rpm : 700  
 travel mm : 6.30...6.70

4th speed rpm : 1085  
 travel mm : 7.70...7.90

5th speed rpm : 1170  
 travel mm : 9.10...9.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 196.0...198.0

1000 : (194.0...200.0)



Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 113...121

Testing:  
1st rack travel in: 12.40  
Speed rpm : 1065...1075  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 59...67

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.40  
Speed rpm : 250  
Rack travel in mm : 3.80...4.00

#### CONSTANT REGULATION

Speed rpm : 250...370

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.40...13.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.10  
2nd pressure hPa : 90  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 680  
Rack travel in m: 12.80...13.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 134.5...136.5  
1000 s: (131.5...139.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 1065...1075

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 160.0...190.0  
1000 s: (156.0...194.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.80...4.00  
Del. quantity cm<sup>3</sup>/ : 15.0...19.0  
1000 s: (12.0...22.0)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 y1  
 Edition : 29.11.91  
 Replaces : 2.10.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 903  
 Injection pump  
 Pump designation : PE6P110A32ORS3080-5  
 EP type number : 0 411 816 767  
 Governor  
 Governor design. : RQV250...950PA921-19  
 Governor no. : 0 421 813 802

Customer-spec. information  
 Customer : VOLVO-TRUCK

Engine : TD102FM

1st version kW : 235.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.40...13.50

Del.quantity cm<sup>3</sup>/ : 19.6...19.8

100 s: (19.4...20.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 3.8...4.0

Del.quantity cm<sup>3</sup>/ : 1.5...1.9

100 s: (1.2...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 350  
 travel mm : 2.20...2.80

3rd speed rpm : 750  
 travel mm : 6.30...6.70

4th speed rpm : 995  
 travel mm : 8.20...8.40

5th speed rpm : 1060  
 travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 196.0...198.0

1000 : (194.0...200.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

#### Testing:

1st rack travel in: 12.40  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 59...67

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.40  
Speed rpm : 250  
Rack travel in mm : 3.80...4.00

#### CONSTANT REGULATION

Speed rpm : 250...360

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.40...13.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.10  
2nd pressure hPa : 90  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 680  
Rack travel in m: 12.80...13.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 134.5...136.5  
1000 s: (131.5...139.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...190.0  
1000 s: (156.0...194.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.80...4.00  
Del.quantity cm<sup>3</sup>/ : 15.0...19.0  
1000 s: (12.0...22.0)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

#### Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 L 5  
 Edition : 06.04.90  
 Replaces : 6.10.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 907  
 Injection pump  
 Pump designation : PE6P120A320LS3815-13  
 EP type number : 0 411 826 782  
 Governor  
 Governor design. : RQV350...1050PA925  
 Governor no. : 0 421 813 764

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 441 A

1st version kW : 191.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.40...11.50

Del. quantity cm<sup>3</sup>/ : 18.2...18.5  
 100 s: (17.9...18.8)

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 350.0  
 Rack travel in mm : 4.6...5.2  
 Del. quantity cm<sup>3</sup>/ : 1.4...2.2  
 100 s: (1.1...2.5)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.40...1.60  
 2nd speed rpm : 800  
 travel mm : 4.70...5.10  
 3rd speed rpm : 1100  
 travel mm : 7.60...8.20  
 4th speed rpm : 1175  
 travel mm : 9.20...9.80

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1080  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050

Aneroid pressure h: 900  
Del. quantity : 182.0...185.0  
1000 : (179.0...188.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version:  
Control lever  
position degrees: 114...122

Testing:  
1st rack travel in: 10.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 64...72

Testing:  
Speed rpm : 250  
Minimum rack travel: 8.00  
Speed rpm : 350  
Rack travel in mm : 4.60...5.20

#### CONSTANT REGULATION

Speed rpm : 350...550

#### TORQUE CONTROL

Dimension a mm : 1.30  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 950  
Rack travel in m: 11.90...12.10  
3rd speed rpm : 850  
Rack travel in m: 12.40...12.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.30...9.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : 400  
Rack travel in m: 10.10...10.30  
2nd pressure hPa : 600  
Rack travel in m: 11.70...12.10

K27

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version:

Aneroid pressure h: 900  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 209.0...213.0  
1000 s: (206.0...216.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

Aneroid pressure h: 900  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 155.0...157.0  
1000 s: (152.0...160.0)  
Spread cm<sup>3</sup> : -  
1000 s: (12.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 129.0...131.0  
1000 s: (126.0...134.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 190.0...210.0  
1000 s: (186.0...214.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 x 3  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 910  
 Injection pump  
 Pump designation : PE6P110A320LS3851-1  
 EP type number : 0 411 816 780  
 Governor  
 Governor design. : RQ300/1050PA187-26  
 Governor no. : 0 421 801 489

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441

1st version kW : 160.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm<sup>3</sup>/ : 12.2...12.4

100 s: (11.9...12.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.4...8.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.6

100 s: (1.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 122.0...124.0

1000 : (119.5...126.5)

Spread cm<sup>3</sup> : 8.50

1000 : (13.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 13.5

Testing:

1st rack travel in: 11.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1300  
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.7

Testing:

Speed rpm : 200  
Minimum rack travel: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.40...7.00  
Rack travel in mm : 2.00  
Speed rpm : 390...430

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 123.0...129.0  
1000 s: (120.5...131.5)  
Spread cm<sup>3</sup> : 11.00  
1000 s: (14.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 w 2  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 918  
 Injection pump  
 Pump designation : PE6P110A32QLS3851-1  
 EP type number : 0 411 816 780  
 Governor  
 Governor design. : RQV300...1050PA884-6  
 Governor no. : 0 421 813 832

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441

1st version kW : 160.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 12.2...12.4

100 s: (11.9...12.6)

Spread cm3 : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.4...8.0

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm3 : 0.6

100 s: (1.1)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 0.50...1.00

2nd speed rpm : 460  
 travel mm : 2.70...3.20

3rd speed rpm : 738  
 travel mm : 4.60...5.10

4th speed rpm : 1107  
 travel mm : 7.90...8.40

5th speed rpm : 1370  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP



1st version  
Speed rpm : 1050  
Del.quantity : 122.0...124.0  
1000 : (119.5...126.5)  
Spread cm<sup>3</sup> : 8.50  
1000 : (13.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

#### Testing:

1st rack travel in: 11.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 83...91

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.40...7.00

#### CONSTANT REGULATION

Speed rpm : 300...500

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 123.0...129.0  
1000 s: (120.5...131.5)  
Spread cm<sup>3</sup> : 11.00  
1000 s: (14.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 e1  
 Edition : 29.11.91  
 Replaces : 2.10.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 922

Injection pump  
 Pump designation : PE6P120A320RS3176-3  
 EP type number : 0 411 826 793  
 Governor  
 Governor design. : RQV250...1050PA808  
 Governor no. : 0 421 813 553

Customer-spec. information

Customer : ENASA

Engine : 96 R1 CX

1st version kW : 220.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
 : (3.75...3.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 12.80...12.90

Del. quantity cm<sup>3</sup>/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...6.8

Del. quantity cm<sup>3</sup>/ : 1.1...1.7

100 s: (0.8...2.0)

Spread cm<sup>3</sup> : 0.7

100 s: (1.1)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 350  
 travel mm : 1.70...2.30

3rd speed rpm : 700  
 travel mm : 4.50...5.10

4th speed rpm : 1095  
 travel mm : 8.20...8.40

5th speed rpm : 1185  
 travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 900

Del.quantity : 196.0...198.0  
1000 : (193.0...201.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 80...88

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.20  
Speed rpm : 250  
Rack travel in mm : 6.60...6.80

#### CONSTANT REGULATION

Speed rpm : 250...500

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.80...12.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.00...10.40  
2nd pressure hPa : 500  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 270  
Rack travel in m: 10.90...11.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 1030  
Del.quantity cm<sup>3</sup>/ : 208.0...214.0  
1000 s: (205.0...217.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 130.0...132.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 115.0...135.0  
1000 s: (111.0...139.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.60...6.80

#### Remarks:

Start of delivery - engine: 21° before TDC

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 q  
 Edition : 29.11.91  
 Replaces : 10.8.90  
 Test oil : ISO-4113

Combination no. : 0 401 846 927

Injection pump  
 Pump designation : PE6P110A72ORS3258  
 EP type number : 0 411 816 771  
 Governor  
 Governor design. : RQ325/1200PA913-2  
 Governor no. : 0 421 801 539

Customer-spec. information  
 Customer : DAF

Engine : HT 168 G

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 12.50...13.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 7.80...8.00  
 & maximum rack tra: 12.5...13.5  
 Difference ° CS : 1.50...3.00

BASIC SETTING

1st speed rpm : 1000

---

Rack travel in mm : 13.30...13.40

---

Del.quantity cm<sup>3</sup>/ : 12.3...12.5

---

100 s: (12.1...12.8)

---

Spread cm<sup>3</sup> : 0.4

---

100 s: (0.7)

2nd speed rpm : 325.0

Rack travel in mm : 7.7...8.1

Del.quantity cm<sup>3</sup>/ : 1.4...1.9

100 s: (1.1...2.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 123.5...125.5

1000 : (121.0...128.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:  
 Speed rpm : 550

Rack travel in mm : 15.8

Testing:  
 1st rack travel in: 12.30  
 Speed rpm : 1235...1250

2nd rack travel in: 4.00

Speed rpm : 1325...1355  
4th rack travel in: 1500  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.7

#### Testing:

Speed rpm : 100  
Minimum rack trave: 7.90  
Speed rpm : 325  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 385...425

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 14.30...14.40  
2nd speed rpm : 1200  
Rack travel in m: 14.20...14.40

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 13.30...13.40

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.50...11.70  
2nd pressure hPa : 370  
Rack travel in m: 12.80...12.90  
3rd pressure hPa : 240  
Rack travel in m: 11.80...12.10

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 81.5...83.5  
1000 s: (79.0...86.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.30  
Speed rpm : 1235...1250

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 6.60...6.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 r  
 Edition : 29.11.91  
 Replaces : 20.12.90  
 Test oil : ISO-4113

Combination no. : 0 401 846 928

Injection pump  
 Pump designation : PE6P110A720RS3258  
 EP type number : 0 411 816 771  
 Governor  
 Governor design. : RQV325...1200PA910-1  
 Governor no. : 0 421 813 880

Customer-spec. information  
 Customer : DAF

Engine : HT 168 G

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 12.50...13.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 7.80...8.00  
 & maximum rack tra: 12.5...13.5  
 Difference ° CS : 1.50...3.00

BASIC SETTING

1st speed rpm : 1000

---

Rack travel in mm : 13.30...13.40

---

Del. quantity cm<sup>3</sup>/ : 12.3...12.5

---

100 s: (12.1...12.8)

---

Spread cm<sup>3</sup> : 0.4

---

100 s: (0.7)

2nd speed rpm : 325.0  
 Rack travel in mm : 7.7...8.1  
 Del. quantity cm<sup>3</sup>/ : 1.4...1.9  
 100 s: (1.1...2.1)

Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1245  
 travel mm : 8.10...8.30

2nd speed rpm : 325  
 travel mm : 0.90...1.30

3rd speed rpm : 500  
 travel mm : 2.90...3.50

4th speed rpm : 800  
 travel mm : 4.60...5.00

5th speed rpm : 1500  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1240  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000  
 Aneroid pressure h: 1000  
 Del. quantity : 123.5...125.5  
 1000 : (121.0...128.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

#### Testing:

1st rack travel in: 12.30  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1345...1375  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 79...87

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.90  
Speed rpm : 325  
Rack travel in mm : 6.60...6.80

#### CONSTANT REGULATION

Speed rpm : 340...460

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 13.30...13.40

##### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.20...11.40  
2nd pressure hPa : 370  
Rack travel in m: 12.80...12.90  
3rd pressure hPa : 240  
Rack travel in m: 11.80...12.10

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 81.5...83.5  
1000 s: (79.0...86.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.30  
Speed rpm : 1240...1250

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 6.60...6.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 5,9 b  
 Edition : 18.12.91  
 Replaces : 23.8.91  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 937  
 Injection pump  
 Pump designation : PE6P110A32ORS3266  
 EP type number : 0 411 816 777  
 Governor  
 Governor design. : RQV300...1300PA996K  
 Governor no. : 0 421 815 277

Customer-spec. information  
 Customer : VOLVO-TRUCK

Engine : TD63ES

1st version kW : 155.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.40...2.50  
 : (2.30...2.50)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 780

Rack travel in mm : 11.90...12.00

Del.quantity cm<sup>3</sup>/ : 13.9...14.1

100 s: (13.7...14.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 330.0

Rack travel in mm : 5.4...5.6

Del.quantity cm<sup>3</sup>/ : 1.7...2.1

100 s: (1.4...2.4)

Spread cm<sup>3</sup> : 0.7

100 s: (1.1)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 330  
 travel mm : 1.20...1.60

2nd speed rpm : 500  
 travel mm : 2.90...3.50

3rd speed rpm : 900  
 travel mm : 4.70...5.30

4th speed rpm : 1370  
 travel mm : 9.80...10.00

5th speed rpm : 1450  
 travel mm : 11.00...11.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1470

Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 780

Aneroid pressure h: 1200



Del.quantity : 139.0...141.0  
1000 : (137.0...143.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 114...122

#### Testing:

1st rack travel in: 11.20  
Speed rpm : 1360...1370  
2nd rack travel in: 4.00  
Speed rpm : 1430...1460  
4th rack travel in: 1520  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 70...78

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 330  
Rack travel in mm : 5.40...5.60

#### CONSTANT REGULATION

Speed rpm : 330...600

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 780  
Rack travel in m: 11.90...12.00  
2nd speed rpm : 1300  
Rack travel in m: 12.20...12.40

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1300  
Pressure hPa : 1200  
Rack travel mm : 12.20...12.40

#### Measurement

Speed 1/min : 1300

1st pressure hPa : -  
Rack travel in m: 8.50...8.70  
2nd pressure hPa : 110  
Rack travel in m: 8.70...8.80  
3rd pressure hPa : 750  
Rack travel in m: 11.60...11.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1300  
Del.quantity cm<sup>3</sup>/ : 130.0...134.0  
1000 s: (127.0...137.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 780  
Del.quantity cm<sup>3</sup>/ : 73.0...75.0  
1000 s: (70.0...78.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1360...1370

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...130.0  
1000 s: (96.0...134.0)  
Rack travel in mm : 10.40...10.90

#### LOW IDLE

Speed rpm : 330  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 17.0...21.0  
1000 s: (14.0...24.0)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (11.00)

Remarks:

:

Start-of-delivery setting with ROBO  
diaphragm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 5,9 b 1  
 Edition : 18.12.91  
 Replaces : 23.8.91  
 Test oil : ISO-4113

Combination no. : 0 401 846 938

Injection pump  
 Pump designation : PE6P110A32ORS3266  
 EP type number : 0 412 816 777  
 Governor  
 Governor design. : RQV300...1300PA996-1  
 K  
 Governor no. : 0 421 815 278

Customer-spec. information  
 Customer : VOLVO-TRUCK

Engine : TD63E

1st version kw : 133.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.40...2.50  
 : (2.30...2.50)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 780

Rack travel in mm : 10.30...10.40

Del.quantity cm<sup>3</sup>/ : 10.2...10.4

100 s: (10.0...10.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 330.0

Rack travel in mm : 5.4...5.6

Del.quantity cm<sup>3</sup>/ : 1.7...2.1

100 s: (1.4...2.4)

Spread cm<sup>3</sup> : 0.7

100 s: (1.1)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 330

travel mm : 1.20...1.60

2nd speed rpm : 500

travel mm : 2.90...3.50

3rd speed rpm : 900

travel mm : 4.70...5.30

4th speed rpm : 1370

travel mm : 9.80...10.00

5th speed rpm : 1450

travel mm : 11.00...11.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1470

Rack travel in mm : 6.00...12.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 780

Aneroid pressure h: 1200  
Del. quantity : 102.0...104.0  
1000 : (100.0...106.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 114...122

Testing:  
1st rack travel in: 10.20  
Speed rpm : 1360...1370  
2nd rack travel in: 4.00  
Speed rpm : 1420...1450  
4th rack travel in: 1520  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 70...78

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 330  
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION  
Speed rpm : 330...600

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 780  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 1050  
Rack travel in m: 10.80...11.00  
3rd speed rpm : 1300  
Rack travel in m: 11.20...11.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1300  
Pressure hPa : 1200  
Rack travel mm : 11.20...11.40

Measurement  
Speed 1/min : 1300

1st pressure hPa : -  
Rack travel in m: 8.50...8.70  
2nd pressure hPa : 110  
Rack travel in m: 8.70...8.80

3rd pressure hPa : 530  
Rack travel in m: 10.60...10.80

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 114.0...118.0  
1000 s: (111.0...121.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 1300  
Del. quantity cm<sup>3</sup>/ : 118.0...124.0  
1000 s: (115.0...127.0)  
Aneroid pressure h: -  
Speed rpm : 780  
Del. quantity cm<sup>3</sup>/ : 73.0...75.0  
1000 s: (70.0...78.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.20  
Speed rpm : 1360...1370

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 100.0...130.0  
1000 s: (96.0...134.0)  
Rack travel in mm : 10.40...10.90

#### LOW IDLE

Speed rpm : 330  
Rack travel in mm : 5.40...5.60  
Del. quantity cm<sup>3</sup>/ : 17.0...21.0  
1000 s: (14.0...24.0)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (11.00)

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROBO  
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 x 4  
 Edition : 20.12.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 942  
 Injection pump  
 Pump designation : PE6P110A320LS3851-1  
 EP type number : 0 411 816 780  
 Governor  
 Governor design. : RQ300/1050PA187-33  
 Governor no. : 0 421 801 574

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441

1st version kW : 151.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm<sup>3</sup>/ : 11.8...12.0

100 s: (11.5...12.2)

Spread cm<sup>3</sup> : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.1...7.7

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.6

100 s: (1.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 118.0...120.0

1000 : (115.5...122.5)

Spread cm<sup>3</sup> : 8.50

1000 : (13.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 13.5

Testing:

1st rack travel in: 11.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1300  
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.7

Testing:

Speed rpm : 200  
Minimum rack trave: 8.40  
Speed rpm : 300  
Rack travel in mm : 6.40...7.00  
Rack travel in mm : 2.00  
Speed rpm : 390...430

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 119.0...125.0  
1000 s: (116.5...127.5)  
Spread cm3 : 11.00  
1000 s: (14.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 w 3  
 Edition : 20.12.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 943  
 Injection pump  
 Pump designation : PE6P110A320LS3851-1  
 EP type number : 0 411 816 780  
 Governor  
 Governor design. : RQV300...1050PA884-9  
 Governor no. : 0 421 813 912

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441

1st version kW : 151.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del. quantity cm<sup>3</sup>/ : 11.8...12.0

100 s: (11.5...12.2)

Spread cm<sup>3</sup> : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.1...7.7

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.6

100 s: (1.1)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 0.50...1.00

2nd speed rpm : 460  
 travel mm : 2.70...3.20

3rd speed rpm : 730  
 travel mm : 4.70...5.20

4th speed rpm : 1107  
 travel mm : 7.90...8.40

5th speed rpm : 1370  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Del.quantity : 118.0...120.0  
1000 : (115.5...122.5)  
Spread cm3 : 8.50  
1000 : (13.00)

RATED SPEED

1st version  
Control lever  
position degrees: ?

Testing:  
1st rack travel in: 11.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: ?

Testing:  
Speed rpm : 200  
Minimum rack trave: 8.40  
Speed rpm : 300  
Rack travel in mm : 6.40...7.00

CONSTANT REGULATION  
Speed rpm : 300...500

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm3/ : 119.0...125.0  
1000 s: (116.5...127.5)  
Spread cm3 : 11.00  
1000 s: (14.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.20  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:  
:

POSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 l  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 951  
 Injection pump  
 Pump designation : PE6P120A320RS3240  
 EP type number : 0 411 826 786  
 Governor  
 Governor design. : RQV250...1175PA371-2  
 Governor no. : 0 421 813 945

Customer-spec. information  
 Customer : VOLVO-TRUCK

Engine : TD122FS

1st version kW : 309.0  
 Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 457 413 010  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 1 688 901 019  
 Opening pressure, bar : 207...210  
 Orifice plate diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 13.20...13.30  
 Del. quantity cm<sup>3</sup>/ : 23.3...23.5  
 100 s: (23.0...23.8)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 4.9...5.1  
 Del. quantity cm<sup>3</sup>/ : 2.7...3.3  
 100 s: (2.5...3.5)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 450  
 travel mm : 2.40...3.00  
 3rd speed rpm : 800  
 travel mm : 4.40...5.00  
 4th speed rpm : 1240  
 travel mm : 8.50...8.70  
 5th speed rpm : 1350  
 travel mm : 9.80...10.20

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1240  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 1200



Del.quantity : 233.5...235.5  
1000 : (230.5...238.5)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 104...112

Testing:  
1st rack travel in: 12.20  
Speed rpm : 1230...1240  
2nd rack travel in: 4.00  
Speed rpm : 1320...1350  
4th rack travel in: 1420  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 68...76

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 250  
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION  
Speed rpm : 250...340

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.20...13.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.30...10.50  
2nd pressure hPa : 205  
Rack travel in m: 10.50...10.60  
3rd pressure hPa : 710  
Rack travel in m: 12.90...13.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 160.0...162.0  
1000 s: (157.0...165.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 1230...1240

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 270.0...310.0  
1000 s: (266.0...314.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.90...5.10  
Del.quantity cm3/ : 27.0...33.0  
1000 s: (25.0...35.0)  
Spread cm3 : 5.00  
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

Start-of-delivery setting with ROBO  
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 x 5  
 Edition : 20.12.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 952  
 Injection pump  
 Pump designation : PE6P110A320LS3851-1  
 EP type number : 0 411 816 780  
 Governor  
 Governor design. : RQ300/1050PA187-33  
 Govenner no. : 0 421 801 574

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441

1st version kW : 151.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm<sup>3</sup>/ : 11.8...12.0

100 s: (11.5...12.2)

Spread cm<sup>3</sup> : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.1...7.7

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.6

100 s: (1.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 118.0...120.0

1000 : (115.5...122.5)

Spread cm<sup>3</sup> : 8.50

1000 : (13.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 13.5

Testing:

1st rack travel in: 11.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1300  
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.7

Testing:

Speed rpm : 200  
Minimum rack trave: 8.40  
Speed rpm : 300  
Rack travel in mm : 6.40...7.00  
Rack travel in mm : 2.00  
Speed rpm : 390...430

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 119.0...125.0  
1000 s: (116.5...127.5)  
Spread cm<sup>3</sup> : 11.00  
1000 s: (14.0)

BREAKAWAY

1st version

min rack travel less than

full load rack tr: 11.20  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,0 y5  
 Edition : 22.11.91  
 Replaces : 23.8.91  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 957  
 Injection pump  
 Pump designation : PE6P110A72ORS3115  
 EP type number : 0 411 816 735  
 Governor  
 Governor design. : RQV250...1100PA468-1  
 Governor no. : 0 421 813 956

Customer-spec. information  
 Customer : SCANIA

Engine : DN11 08

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40  
 : (3.25...3.45)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.70...11.80

Del.quantity cm<sup>3</sup>/ : 10.4...10.6

100 s: (10.2...10.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 4.4...4.8

Del.quantity cm<sup>3</sup>/ : 1.2...1.6

100 s: (-)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.20...1.60

2nd speed rpm : 350  
 travel mm : 2.40...3.00

3rd speed rpm : 650  
 travel mm : 4.60...5.20

4th speed rpm : 1145  
 travel mm : 8.60...8.80

5th speed rpm : 1255  
 travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 104.0...106.0

1000 : (102.0...108.0)

Spread cm<sup>3</sup> : 5.00

1000 : (7.00)

RATED SPEED

1st version  
Control lever  
position degrees: 113...121

Testing:  
1st rack travel in: 10.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 62...70

Testing:  
Speed rpm : 100  
Minimum rack trave: 6.00  
Speed rpm : 250  
Rack travel in mm : 4.40...4.60  
Rack travel in mm : 2.00  
Speed rpm : 360...420

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 110.5...115.5  
1000 s: (108.0...118.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...290.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.40...4.60

Remarks:

:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROBO  
diaphragm.

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 13,8 j  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 959  
 Injection pump  
 Pump designation : PE6P120A72ORS3293  
 EP type number : 0 411 826 801  
 Governor  
 Governor design. : RQV225...1000PA1016-  
 6  
 Governor no. : 0 421 813 971  
 Customer-spec. information  
 Customer : IVECO-UNIC  
 Engine : 8215.22.400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 075  
 Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 14.20...14.30  
 Del.quantity cm<sup>3</sup>/ : 20.6...20.8  
 100 s : (20.3...21.1)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)  
 2nd speed rpm : 375.0  
 Rack travel in mm : 7.1...7.5  
 Del.quantity cm<sup>3</sup>/ : 2.5...3.1  
 100 s : (2.2...3.4)  
 Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045  
 travel mm : 7.80...8.00  
 2nd speed rpm : 225  
 travel mm : 0.60...1.00  
 3rd speed rpm : 700  
 travel mm : 3.80...4.40  
 4th speed rpm : 1300  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1110  
 Rack travel in mm : 11.90...14.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 700  
 Del.quantity : 206.0...208.0  
 1000 : (203.0...211.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 101...109

Testing:  
1st rack travel in: 13.20  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1125...1155  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 75...83

Testing:  
Speed rpm : 300  
Minimum rack travel: 9.50  
Speed rpm : 375  
Rack travel in mm : 7.20...7.40

CONSTANT REGULATION

Speed rpm : 380...500

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 14.20...14.30

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.90...12.10  
2nd pressure hPa : 260  
Rack travel in m: 13.40...13.50  
3rd pressure hPa : 200  
Rack travel in m: 12.20...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 700  
Del.quantity cm3/ : 208.0...214.0  
1000 s: (205.0...217.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm3/ : 154.0...156.0  
1000 s: (151.0...159.0)  
1000 s: (8.00)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.20  
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 245.0...275.0  
1000 s: (241.0...279.0)

Remarks:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,2 c  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 846 960

Injection pump  
 Pump designation : PE6P110A320RS3265  
 EP type number : 0 411 816 778  
 Governor  
 Governor design. : RQV300...1100PA1019K  
 Governor no. : 0 421 815 290

Customer-spec. information  
 Customer : VME

Engine : TD102KTE

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.40...13.50

Del.quantity cm<sup>3</sup>/ : 16.8...17.0

100 s: (16.6...17.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.4

Del.quantity cm<sup>3</sup>/ : 2.5...2.9

100 s: (2.3...3.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 0.90...1.30

2nd speed rpm : 500  
 travel mm : 3.00...3.60

3rd speed rpm : 900  
 travel mm : 7.30...7.70

4th speed rpm : 1150  
 travel mm : 8.90...9.10

5th speed rpm : 1260  
 travel mm : 10.80...11.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1230

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1500

Del.quantity : 168.0...170.0  
 1000 : (166.0...172.0)

Spread cm<sup>3</sup> : 4.50

1000 : (7.50)

## RATED SPEED



1st version  
Control lever  
position degrees: 113...121

Testing:  
1st rack travel in: 12.40  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 67...75

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.80  
Speed rpm : 300  
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION  
Speed rpm : 300...460

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 13.40...13.50  
2nd speed rpm : 600  
Rack travel in m: 12.80...13.00  
3rd speed rpm : 740  
Rack travel in m: 13.20...13.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1500  
Rack travel mm : 13.40...13.50

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.30...10.50  
2nd pressure hPa : 90  
Rack travel in m: 10.50...10.60  
Rack travel in m: 12.90...13.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 174.0...178.0  
1000 s: (172.0...180.0)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 116.0...118.0  
1000 s: (113.0...121.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.40  
Speed rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...190.0  
1000 s: (156.0...194.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Del.quantity cm<sup>3</sup>/ : 25.0...29.0  
1000 s: (23.0...31.0)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VCL 12,2 k  
 Edit on : 29.11.91  
 Replaces : 23.10.91  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 961  
 Injection pump  
 Pump designation : PE6P120A32ORS3292  
 EP type number : 0 411 826 804  
 Governor  
 Governor design. : RQV300...1050PA1020  
 Governor no. : 0 421 813 976

Customer-spec. information  
 Customer : VME

Engine : TD122 GH 3049  
 1st version kW : 207.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 457 413 010  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 1 688 901 019  
 Opening pressure, bar : 207...210  
 Orifice plate diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 3...27

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 11.60...11.70  
 Del. quantity cm<sup>3</sup>/ : 20.5...20.7  
 100 s : (20.2...21.0)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.0...6.2  
 Del. quantity cm<sup>3</sup>/ : 3.3...3.8  
 100 s : (3.0...4.0)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.30...1.70  
 2nd speed rpm : 450  
 travel mm : 2.40...3.00  
 3rd speed rpm : 700  
 travel mm : 4.30...4.90  
 4th speed rpm : 1100  
 travel mm : 7.80...8.00  
 5th speed rpm : 1200  
 travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1120  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Aneroid pressure h: 1200

Del. quantity : 205.0...207.0  
1000 : (202.0...210.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 114...122

Testing:  
1st rack travel in: 10.60  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 88...96

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20

#### CONSTANT REGULATION

Speed rpm : 300...420

#### TORQUE CONTROL

Dimension a mm : 1.30  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 550  
Rack travel in m: 12.90...13.10  
3rd speed rpm : 650  
Rack travel in m: 12.60...12.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.90...13.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.60...11.90  
2nd pressure hPa : 530  
Rack travel in m: 11.80...11.90

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 550  
Del. quantity cm<sup>3</sup>/ : 243.0...249.0  
1000 s: (240.0...252.0)  
Aneroid pressure h: -  
Speed rpm : 550  
Del. quantity cm<sup>3</sup>/ : 208.0...210.0  
1000 s: (205.0...213.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load-rack tr: 10.60  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 160.0...190.0  
1000 s: (156.0...194.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Del. quantity cm<sup>3</sup>/ : 33.0...38.0  
1000 s: (30.5...40.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 12,1 c  
 Edition : 20.12.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combinatic. no. : 0 401 846 962  
 Injection pump  
 Pump designation : PE6P120A320RS3189  
 EP type number : 0 411 826 759  
 Governor  
 Governor design. : RQ750PA783-3  
 Governor no. : 0 421 801 631

Customer-spec. information  
 Customer : PENTA

Engine : TWD 1010 G

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 016  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00

M02

Firing order : 1- 5- 3- 6- 2- 4  
 Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 10.80...10.90  
 Del.quantity cm<sup>3</sup>/ : 22.3...22.5  
 100 s : (22.0...22.8)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)  
 2nd speed rpm : 300.0  
 Del.quantity cm<sup>3</sup>/ : 2.0...2.6  
 100 s : (1.8...2.8)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.8)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Del.quantity : 223.0...225.0  
 1000 : (220.0...228.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Testing:  
 1st rack travel in: 9.80  
 Speed rpm : 750...755  
 2nd rack travel in: 4.00  
 Speed rpm : 779...792  
 4th rack travel in: 850  
 Speed rpm : 0.00...1.00

BREAKAWAY

1st version  
 1mm rack travel less than  
 full load rack tr: 9.80  
 Speed rpm : 750...755

Remarks:

:

APPLICATION

Generator set



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 L 6  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 848 805  
 Injection pump  
 Pump designation : PE8P110A320LS3846-2  
 EP type number : 0 411 818 725  
 Governor  
 Governor design. : RQ300/1050PA187-27  
 Governor no. : 0 421 801 488

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 195.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.70...11.90

Del.quantity cm<sup>3</sup>/ : 10.8...11.0

100 s: (10.5...11.2)

Spread cm<sup>3</sup> : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.7...8.3

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.6

100 s: (1.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 108.0...110.0

1000 : (105.5...112.5)

Spread cm<sup>3</sup> : 8.50

1000 : (13.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.3

Testing:

Speed rpm : 200  
Minimum rack trave: 9.20  
Speed rpm : 300  
Rack travel in mm : 7.00...7.60  
Rack travel in mm : 2.00  
Speed rpm : 390...430

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 108.0...114.0  
1000 s: (105.5...116.5)  
Spread cm<sup>3</sup> : 11.00  
1000 s: (14.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 L 7  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 848 806  
 Injection pump  
 Pump designation : PE8P110A320LS3846-2  
 EP type number : 0 411 818 725  
 Governor  
 Governor design. : RQ300/1050PA187-28  
 Governor no. : 0 421 801 492

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 213.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 12.20...12.30  
 Del. quantity cm<sup>3</sup>/ : 12.2...12.4  
 100 s: (11.9...12.6)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.3)

2nd speed rpm : 300.0  
 Rack travel in mm : 7.4...8.0  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.4)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.1)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 650  
 Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del. quantity : 122.0...124.0  
 1000 : (119.5...126.5)  
 Spread cm<sup>3</sup> : 8.50  
 1000 : (13.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 650  
 Rack travel in mm : 13.5



Testing:

1st rack travel in: 11.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1300  
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.7

Testing:

Speed rpm : 200  
Minimum rack trave: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.40...7.00  
Rack travel in mm : 2.00  
Speed rpm : 390...430

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 123.0...129.0  
1000 s: (120.5...131.5)  
Spread cm3 : 11.00  
1000 s: (14.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 r 2  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 848 808  
 Injection pump  
 Pump designation : PE8P110A320LS3846-2  
 EP type number : 0 411 818 725  
 Governor  
 Governor design. : RQV300...1050PA884-5  
 Governor no. : 0 421 813 831

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442  
 1st version kW : 213.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Overflow  
 quantity min. 1/h: 100...120  
 Test nozzle holder  
 assembly : 1 688 901 101  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,6  
 Test lines : 1 680 750 008  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 12.20...12.30  
 Del. quantity cm<sup>3</sup>/ : 12.2...12.4  
 100 s: (11.9...12.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.3)  
 2nd speed rpm : 300.0  
 Rack travel in mm : 7.4...8.0  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.4)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.1)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 0.50...1.00  
 2nd speed rpm : 460  
 travel mm : 2.70...3.20  
 3rd speed rpm : 738  
 travel mm : 4.60...5.10  
 4th speed rpm : 1107  
 travel mm : 7.90...8.40  
 5th speed rpm : 1370  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1100  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Del.quantity : 122.0...124.0  
1000 : (119.5...126.5)  
Spread cm<sup>3</sup> : 8.50  
1000 : (13.00)

RATED SPEED

1st version  
Control lever  
position degrees: ?

Testing:  
1st rack travel in: 11.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: ?

Testing:  
Speed rpm : 200  
Minimum rack trave: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.40...7.00

CONSTANT REGULATION  
Speed rpm : 300...500

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 123.0...129.0  
1000 s: (120.5...131.5)  
Spread cm<sup>3</sup> : 11.00  
1000 s: (14.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.20  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks: :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 r 3  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 848 810

Injection pump  
 Pump designation : PE8P110A320LS3846-2  
 EP type number : 0 411 818 725  
 Governor  
 Governor design. : RQV300...1050PA884-7  
 Governor no. : 0 421 813 859

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 195.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cvl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.70...11.90

Del.quantity cm<sup>3</sup>/ : 10.8...11.0

100 s: (10.5...11.2)

Spread cm<sup>3</sup> : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.7...8.3

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.6

100 s: (1.1)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 0.50...1.00

2nd speed rpm : 460  
 travel mm : 2.70...3.20

3rd speed rpm : 738  
 travel mm : 4.60...5.10

4th speed rpm : 1107  
 travel mm : 7.90...8.40

5th speed rpm : 1370  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Del.quantity : 108.0...110.0  
1000 : (105.5...112.5)  
Spread cm<sup>3</sup> : 8.50  
1000 : (13.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: ?

Testing:  
1st rack travel in: 10.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: ?

Testing:  
Speed rpm : 200  
Minimum rack trave: 9.20  
Speed rpm : 300  
Rack travel in mm : 7.00...7.60

CONSTANT REGULATION  
Speed rpm : 300...500

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 108.0...114.0  
1000 s: (105.5...116.5)  
Spread cm<sup>3</sup> : 11.00  
1000 s: (14.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:  
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 12,8 c1  
 Edition : 18.12.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 848 820  
 Injection pump  
 Pump designation : PE8P120A720LS3281-1  
 EP type number : 0 411 828 727  
 Governor  
 Governor design. : RQV300...1050PA1009  
 Governor no. : 0 421 813 938

Customer-spec. information  
 Customer : KHD

Engine : BF8L513LC

1st version kw : 243.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 075  
 Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 13.00...14.00  
 Firing order : 1- 8- 7- 2- 6- 5-  
 4- 3

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 13.30...13.40  
 Del. quantity cm<sup>3</sup>/ : 18.6...18.8  
 100 s : (18.3...19.1)  
 Spread cm<sup>3</sup> : 0.6  
 100 s : (1.0)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.9...6.1  
 Del. quantity cm<sup>3</sup>/ : 3.0...3.6  
 100 s : (2.7...3.9)  
 Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL  
 1st speed rpm : 300  
 travel mm : 2.40...2.80  
 2nd speed rpm : 450  
 travel mm : 3.40...4.00  
 3rd speed rpm : 725  
 travel mm : 5.30...5.90  
 4th speed rpm : 1100  
 travel mm : 9.10...9.30  
 5th speed rpm : 1175  
 travel mm : 10.00...10.40

GUIDE SLEEVE POSITION  
 Control-lever position  
 Degree: -1  
 Speed rpm : 1070  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050

Aneroid pressure h: 850  
Del.quantity : 186.0...188.0  
1000 : (183.0...191.0)  
Spread cm3 : 6.00  
1000 : (10.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 119...127

Testing:  
1st rack travel in: 12.30  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 86...94

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 300...500

TORQUE CONTROL  
Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.30...13.40  
2nd speed rpm : 650  
Rack travel in m: 13.50...13.70  
3rd speed rpm : 805  
Rack travel in m: 13.40...13.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 850  
Rack travel mm : 13.50...13.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.80...12.00  
2nd pressure hPa : 450  
Rack travel in m: 13.00...13.10

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 850  
Speed rpm : 650  
Del.quantity cm3/ : 186.0...190.0  
1000 s: (183.0...193.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 124.0...126.0  
1000 s: (121.0...129.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.30  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 175.0...195.0  
1000 s: (-)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 12,8 c  
 Edition : 22.11.91  
 Replaces : 23.10.91  
 Test oil : ISO-4113

Combination no. : 0 401 848 820

Injection pump  
 Pump designation : PE8P120A920/5LS3281  
 EP type number : 0 411 828 724  
 Governor  
 Governor design. : RQV300...1050PA1009  
 Governor no. : 0 421 813 938

Customer-spec. information  
 Customer : KHD

Engine : BF8L513LC

1st version kW : 243.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 13.00...14.00  
 Firing order : 1- 8- 7- 2- 6- 5-  
 4- 3

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

---

Rack travel in mm : 13.30...13.40

---

Del. quantity cm<sup>3</sup>/ : 18.6...18.8  
 100 s : (18.3...19.1)

---

Spread cm<sup>3</sup> : 0.6  
 100 s : (1.0)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.9...6.1  
 Del. quantity cm<sup>3</sup>/ : 3.0...3.6  
 100 s : (2.7...3.9)

Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 2.40...2.80

2nd speed rpm : 450  
 travel mm : 3.40...4.00

3rd speed rpm : 725  
 travel mm : 5.30...5.90

4th speed rpm : 1100  
 travel mm : 9.10...9.30

5th speed rpm : 1175  
 travel mm : 10.00...10.40

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1070  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050



Aneroid pressure h: 850  
Del.quantity : 186.0...188.0  
1000 : (183.0...191.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (10.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 119...127

Testing:  
1st rack travel in: 12.30  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 86...94

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 300...500

TORQUE CONTROL  
Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.30...13.40  
2nd speed rpm : 650  
Rack travel in m: 13.50...13.70  
3rd speed rpm : 805  
Rack travel in m: 13.40...13.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 850  
Rack travel mm : 13.50...13.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.80...12.00  
2nd pressure hPa : 450  
Rack travel in m: 13.00...13.10

M15

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 850  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 186.0...190.0  
1000 s: (183.0...193.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 124.0...126.0  
1000 s: (121.0...129.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.30  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 175.0...195.0  
1000 s: (-)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : FIA 17,2 g1  
 Edition : 22.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 848 822  
 Injection pump  
 Pump designation : PE8P120A920/5LS3857  
 EP type number : 0 411 828 725  
 Governor  
 Governor design. : RQV300...1200PA357  
 Governor no. : 0 421 813 188

Customer-spec. information  
 Customer : IVECO-FIAT

Engine : 8280.02.412

**TEST BENCH REQUIREMENTS**

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 1 688 901 019  
 Opening pressure, bar : 207...210  
 Orifice plate diameter mm : 0,8  
 Test lines : 1 680 750 075  
 Outside diameter x Wall thickness x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27  
 Prestroke mm : 2.85...2.95  
 : (2.85...3.00)  
 Rack travel in mm : 9.00...12.00

M16

Firing order : 1- 8- 4- 3- 6- 5-  
 7- 2

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1200  
 Rack travel in mm : 8.60...8.70  
 Del.quantity cm<sup>3</sup>/ : 14.1...14.3  
 100 s : (13.8...14.6)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.1...5.5  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s : (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1295  
 travel mm : 9.10...9.30  
 2nd speed rpm : 250  
 travel mm : 0.70...1.10  
 3rd speed rpm : 500  
 travel mm : 3.30...3.90  
 4th speed rpm : 800  
 travel mm : 5.10...5.50  
 5th speed rpm : 1500  
 travel mm : 11.00...12.00

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1330  
 Rack travel in mm : 6.30...8.90

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1200  
 Del.quantity : 141.0...143.0  
 1000 : (138.0...146.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 114...122

Testing:

1st rack travel in: 7.60  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1340...1370  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 60...68

Testing:

Speed rpm : 100  
Minimum rack travel: 6.80  
Speed rpm : 300  
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 310...440

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 129.0...135.0  
1000 s: (126.0...138.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.60  
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 210.0...230.0  
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.10...5.50  
Del. quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)

M17

Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 14,5 f  
 Edition : 18.12.91  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 848 823

Injection pump  
 Pump designation : PE8P120A520/4LS3858  
 EP type number : 0 411 828 726  
 Governor  
 Governor design. : RQ750PA663-8  
 Governor no. : 0 421 801 448

Customer-spec. information  
 Customer : MAN

Engine : D 2848 LE

1st version kW : 265.0  
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30  
 : (4.15...4.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm<sup>3</sup>/ : 24.6...24.8

100 s: (24.3...25.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.7...5.1

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 246.0...248.0

1000 : (243.0...251.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 13.40

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 782...795

4th rack travel in: 900

Speed rpm : 0.00...1.00

Remarks:

:

APPLICATION

Generator set



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 14,7 a7  
 Edition : 08.09.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 849 172  
 Injection pump  
 Pump designation : PE10P110A520/5LS846  
 EP type number : 0 411 819 020  
 Governor  
 Governor design. : RQ250/1000PA659-2  
 Governor no. : 0 421 801 207

Customer-spec. information  
 Customer : MAN

Engine : D2540MTF/390

1st version kW : 287.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)  
 Rack travel in mm : 9.00...12.00

M20

Firing order : 10- 9- 4- 1- 8- 7-  
 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
 216-261-288-333

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.10...13.20

Del.quantity cm<sup>3</sup>/ : 16.3...16.5

100 s: (16.0...16.7)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 7.1...7.3

Del.quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 163.0...165.0

1000 : (160.5...167.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.20

Speed rpm : 1045...1060

2nd rack travel in: 4.00

Speed rpm : 1145...1175  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 7.2

Testing:

Speed rpm : 100  
Minimum rack trave: 8.70  
Speed rpm : 250  
Rack travel in mm : 7.10...7.30  
Rack travel in mm : 2.00  
Speed rpm : 350...390

TORQUE CONTROL

Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 700  
Rack travel in m: 13.10...13.20  
2nd speed rpm : 1000  
Rack travel in m: 12.20...12.30  
3rd speed rpm : 790  
Rack travel in m: 12.90...13.10  
4th speed rpm : 890  
Rack travel in m: 12.40...12.70

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 30  
Rack travel mm : 13.10...13.20

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.50...10.70  
2nd pressure hPa : 460  
Rack travel in m: 12.50...12.60  
3rd pressure hPa : 230  
Rack travel in m: 10.90...11.30

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 1000

Del.quantity cm<sup>3</sup>/ : 149.0...153.0  
1000 s: (146.0...156.0)  
Spread cm<sup>3</sup> : -  
1000 s: (9.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 105.0...107.0  
1000 s: (102.5...109.5)  
1000 s: (7.50)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 145.0...165.0  
1000 s: (141.0...169.0)

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 7.10...7.30  
Del.quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.5...20.5)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 7,1 a 1  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 312  
 Injection pump  
 Pump designation : PE6P110A320RS492  
 EP type number : 0 411 816 161  
 Governor  
 Governor design. : RSV200...1100P1A305-  
 1  
 Governor no. : 0 421 833 203

Customer-spec. information  
 Customer : VOLVO-PENTA

Engine : TD71APP

1st version kW : 165.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

M22

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance ± ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.50...11.60

Del.quantity cm<sup>3</sup>/ : 10.9...11.1

100 s: (10.7...11.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 200.0

Rack travel in mm : 5.4...5.6

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (-)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 109.0...111.0

1000 : (107.0...113.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.50

Speed rpm : 1110...1120

2nd rack travel in: 4.00



Speed rpm : 1140...1170  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 13...21

Setting point w/out bumper spring

Speed rpm : 200

Rack travel in mm : 5.0

Speed rpm : 200

Rack travel in mm : 5.40...5.60

Rack travel in mm : 2.00

Speed rpm : 280...340

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50

Speed rpm : 1110...1120

Remarks:

:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 12,2 b1  
 Edition : 20.12.91  
 Replaces : 28.9.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 761A  
 Injection pump  
 Pump designation : PE6P120A320RS3206  
 EP type number : 0 411 826 773  
 Governor  
 Governor design. : RSV250...900P4A374-6  
 Governor no. : 0 421 833 283

Customer-spec. information  
 Customer : VOLVO-PENTA

Engine : TAMD122 A

1st version kW : 280.0  
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 12.10...12.20  
 Del.quantity cm<sup>3</sup>/ : 29.0...29.2  
 100 s : (28.7...29.5)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 5.0...5.2  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s : (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.40

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 1200  
 Del.quantity : 290.5...292.5  
 1000 : (287.5...295.5)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 104...112

Testing:

1st rack travel in: 11.10  
Speed rpm : 1020...1030  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
3rd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1160  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 68...76  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 4.6  
Speed rpm : 250  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 380...440

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 700  
Pressure hPa : 1200  
Rack travel mm : 12.10...12.20

#### Measurement

Speed 1/min : 700

1st pressure hPa : -  
Rack travel in m: 8.60...8.80  
2nd pressure hPa : 360  
Rack travel in m: 8.90...9.00  
3rd pressure hPa : 1030  
Rack travel in m: 11.70...12.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 177.0...179.0  
1000 s: (174.0...182.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1020...1030

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 8.60...8.80

Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 v 1  
 Edition : 18.12.91  
 Replaces : --  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 763  
 Injection pump  
 Pump designation : PE6P120A320LS3815-10  
 EP type number : 0 411 826 735  
 Governor  
 Governor design. : RSV750...1200POA820-8  
 Governor no. : 0 421 833 292

Customer spec. information  
 Customer : MERCEDES-BENZ

Engine : OM421A

1st version kW : 184.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1230

Rack travel in mm : 10.50...10.60

Del.quantity cm<sup>3</sup>/ : 15.4...15.6

100 s: (15.1...15.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 750.0

Rack travel in mm : 3.1...3.7

Del.quantity cm<sup>3</sup>/ : 1.8...2.4

100 s: (1.5...2.7)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1230

Del.quantity : 154.0...156.0

1000 : (151.0...159.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 9.50  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1285...1315  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 3.4

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 750  
Rack travel in mm : 3.10...3.70  
Rack travel in mm : 2.00  
Speed rpm : 755...815

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1180  
Rack travel in m: 10.50...10.60  
2nd speed rpm : 900  
Rack travel in m: 10.70...10.90

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 162.0...166.0  
1000 s: (159.0...169.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.50  
Speed rpm : 1260...1270

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:  
Engine-speed difference between 1 mm  
regulated and control-rod travel 4 mm =  
25...35 1/min.

When adjusting and checking, adjust  
speed regulation to 1260...1270 l/min.  
Afterwards, readjust speed regulation  
to 1210...1220 l/min.

#### APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,0 y7  
 Edition : 22.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 774  
 Injection pump  
 Pump designation : PE6P110A720RS3115-1  
 EP type number : 0 411 816 764  
 Governor  
 Governor design. : RSV350...1100P1A481-  
 3  
 Governor no. : 0 421 833 344

Customer-spec. information  
 Customer : SCANIA

Engine : DN11 08

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
 x Wall thickness : 6.00x1.50x600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40  
 : (3.25...3.45)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.70...11.80

Del. quantity cm<sup>3</sup>/ : 10.4...10.6

100 s : (10.2...10.8)

Spread cm<sup>3</sup> : 0.5

100 s : (0.7)

2nd speed rpm : 350.0

Rack travel in mm : 4.6...4.8

Del. quantity cm<sup>3</sup>/ : 1.3...1.7

100 s : (-)

Spread cm<sup>3</sup> : 0.2

100 s : (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 104.0...106.0

1000 : (102.0...108.0)

Spread cm<sup>3</sup> : 5.00

1000 : (7.00)

RATED SPEED

1st version

Control lever

position degrees: 112...120

Testing:

1st rack travel in: 10.70

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1190...1220

4th rack travel in: 1350

Speed rpm : 0.30...1.40

LOW IDLE 1  
Control Lever  
position degrees: 75...83  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.2  
Speed rpm : 350  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 450...510

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 110.5...115.5  
1000 s: (108.0...118.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
  
full load rack tr: 10.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...290.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.60...4.80

Remarks:

:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

#### ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO  
diaphragm.

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over

N01

on June 4, 1991

Start of delivery - engine: 21° before  
TDC

Firing sequence of engine:  
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 s  
 Edition : 22.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 778  
 Injection pump  
 Pump designation : PE6P110A720RS3263  
 EP type number : 0 411 816 776  
 Governor  
 Governor design. : RSV350...1100P1A481-  
 3  
 Governor no. : 0 421 833 344  
 Customer-spec. information  
 Customer : SCANIA  
 Engine : DN11 47

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 104  
 Opening  
 pressure, bar : 250...253  
 Orifice plate  
 diameter mm : 0,7  
 Test lines : 1 680 750 008  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.30...3.40  
 : (3.25...3.45)

N02

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 10.20...10.30  
 Del.quantity cm<sup>3</sup>/ : 12.0...12.2  
 100 s: (11.7...12.5)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.8)

2nd speed rpm : 350.0  
 Rack travel in mm : 6.7...7.1  
 Del.quantity/ cm<sup>3</sup>/ : 2.0...2.4  
 100 s: (-)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Del.quantity : 120.0...122.0  
 1000 : (117.0...125.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (8.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 82...90

Testing:  
 1st rack travel in: 9.20  
 Speed rpm : 750...755  
 2nd rack travel in: 4.00



Speed rpm : 774...786  
4th rack travel in: 920  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 66...74  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.2  
Speed rpm : 350  
Rack travel in mm : 5.10...5.30

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 230.0...270.0  
1000 s: (226.0...274.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.10...5.30

Remarks:

:

Start-of-delivery setting with ROBO  
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,0 y8  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 786  
 Injection pump  
 Pump designation : PE6P110A72ORS3115  
 EP type number : 0 411 816 735  
 Governor  
 Governor design. : RSV350...1100P1A481-  
 3  
 Governor no. : 0 421 833 344

Customer-spec. information  
 Customer : SCANIA

Engine : DN11 08

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve  
 : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.30...3.40  
 : (3.25...3.45)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 11.70...11.80  
 Del.quantity cm<sup>3</sup>/ : 10.4...10.6  
 100 s: (10.2...10.8)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.7)

2nd speed rpm : 350.0  
 Rack travel in mm : 4.6...4.8  
 Del.quantity cm<sup>3</sup>/ : 1.3...1.7  
 Spread cm<sup>3</sup> : 0.2  
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Del.quantity : 104.0...106.0  
 1000 : (102.0...108.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (7.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 112...120

Testing:  
 1st rack travel in: 10.70  
 Speed rpm : 1140...1150  
 2nd rack travel in: 4.00  
 Speed rpm : 1190...1220  
 4th rack travel in: 1350  
 Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever

position degrees: 75...83

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 4.2

Speed rpm : 350

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00

Speed rpm : 450...510

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100

Del.quantity cm<sup>3</sup>/ : 110.5...115.5

1000 s: (108.0...118.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 240.0...290.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 4.60...4.80

Remarks:

:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with RO80 diaphragm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,6 p 5  
 Edition : 29.11.91  
 Replaces : 27.5.91  
 Test oil : ISO-4113

Combination no. : 0 401 878 711

Injection pump  
 Pump designation : PE8P120A32QLS3816-10  
 EP type number : 0 411 828 715  
 Governor  
 Governor design. : RSV650...1150POA823-5  
 Governor no. : 0 421 833 280

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM422A

1st version kW : 206.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1180

Rack travel in mm : 9.40...9.50

Del. quantity cm<sup>3</sup>/ : 13.6...13.8

100 s: (13.3...14.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 650.0

Rack travel in mm : 3.3...3.6

Del. quantity cm<sup>3</sup>/ : 1.8...2.4

100 s: (1.5...2.7)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

Del. quantity : 136.0...138.0

1000 : (133.0...141.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 46...54

Testing:

1st rack travel in: 8.40  
Speed rpm : 1210...1215  
2nd rack travel in: 4.00  
Speed rpm : 1232...1247  
4th rack travel in: 14.00  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 24...32  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 3.4  
Speed rpm : 650  
Rack travel in mm : 3.30...3.60  
Rack travel in mm : 2.00  
Speed rpm : 655...695

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180  
Rack travel in m: 9.40...9.50  
2nd speed rpm : 950  
Rack travel in m: 10.80...11.10  
3rd speed rpm : 1050  
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 159.0...162.0  
1000 s: (156.0...165.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Speed rpm : 1075  
Del.quantity cm<sup>3</sup>/ : 141.0...153.0  
1000 s: (138.0...156.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.40  
Speed rpm : 1210...1215

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 650  
Rack travel in mm : 3.30...3.60  
Del.quantity cm<sup>3</sup>/ : 18.0...24.0  
1000 s: (15.0...27.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

Engine-speed difference between 1 mm regulated and control-rod travel 4 mm = 25...35 1/min.

When adjusting and checking, adjust speed regulation to 1210...1220 l/min. Afterwards, readjust speed regulation to 1160...1170 l/min.

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,6 p 8  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 878 711  
 Injection pump  
 Pump designation : PE8P120A320LS3816-10  
 EP type number : 0 411 828 715  
 Governor  
 Governor design. : RSV650...1150POA823-5  
 Governor no. : 0 421 833 280  
 Cust. part no. : T3  
 Customer-spec. information  
 Customer : DAIMLER-BENZ  
 Engine : OM422A  
 1st version kW : 206.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Overflow  
 quantity min. 1/h: 100...120  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 Firing order : 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1180  
 Rack travel in mm : 9.40...9.50  
 Del.quantity cm<sup>3</sup>/ : 13.5...13.7  
 100 s: (13.2...14.0)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)  
 2nd speed rpm : 650.0  
 Rack travel in mm : 3.3...3.6  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1180  
 Del.quantity : 135.0...137.0  
 1000 : (132.0...140.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 46...54

### Testing:

1st rack travel in: 8.40  
Speed rpm : 1210...1215  
2nd rack travel in: 4.00  
Speed rpm : 1232...1247  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

## LOW IDLE 1

Control lever  
position degrees: 24...32  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 3.4  
Speed rpm : 650  
Rack travel in mm : 3.30...3.60  
Rack travel in mm : 2.00  
Speed rpm : 655...695

## SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

## TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1180  
Rack travel in m: 9.40...9.50  
2nd speed rpm : 950  
Rack travel in m: 10.80...11.10  
3rd speed rpm : 1050  
Rack travel in m: 10.40...10.60

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 158.0...161.0  
1000 s: (155.0...164.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Speed rpm : 1075  
Del.quantity cm<sup>3</sup>/ : 148.0...152.0  
1000 s: (145.0...155.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.40

Speed rpm : 1210...1215

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

## LOW IDLE

Speed rpm : 650  
Rack travel in mm : 3.30...3.60  
Del.quantity cm<sup>3</sup>/ : 16.0...22.0  
1000 s: (13.0...25.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

### Remarks:

Engine-speed difference between 1 mm regulated and control-rod travel 4 mm = 25...35 1/min.

When adjusting and checking, adjust speed regulation to 1210...1220 l/min. Afterwards, readjust speed regulation to 1160...1170 l/min.

## APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 10,0 d  
 Edition : 18.01.91  
 Replaces : 20.12.90  
 Test oil : ISO-4113

Combination no. : 0 402 035 026

Injection pump  
 Pump designation : PES5P120A720/3LS528  
 EP type number : 0 412 025 022  
 Governor  
 Governor design. : RQ325/950PA813-18  
 Governor no. : 0 421 801 563

Customer-spec. information  
 Customer : MAN

Engine : D2865LF04 / LU04

1st version kW : 198.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 13.00...14.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
 & maximum rack tra: 13.0...14.0  
 Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm : 600

---

Rack travel in mm : 12.10...12.20

---

Del. quantity cm<sup>3</sup>/ : 22.1...22.3  
 100 s: (21.8...22.6)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

---

2nd speed rpm : 325.0  
 Rack travel in mm : 4.4...4.6  
 Del. quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2

Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 1000  
 Del. quantity : 221.0...223.0  
 1000 : (218.0...226.0)

Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version



Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.10  
Speed rpm : 995...1010  
2nd rack travel in: 4.00  
Speed rpm : 1040...1070  
4th rack travel in: 12.00  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 4.5

Testing:

Speed rpm : 100  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.40...4.60  
Rack travel in mm : 2.00  
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 600  
Rack travel in m: 13.00...13.20  
2nd speed rpm : 950  
Rack travel in m: 12.60...12.70  
3rd speed rpm : 800  
Rack travel in m: 12.80...13.00

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 12.10...12.20

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 150  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 440  
Rack travel in m: 11.20...11.50

START CUT-OUT

Speed 1/min : 245 (265)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 950  
Del.quantity cm3/ : 227.0...233.0  
1000 s: (224.0...236.0)  
Aneroid pressure h: 1000  
Speed rpm : 750  
Del.quantity cm3/ : 225.0...231.0  
1000 s: (222.0...234.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 129.0...131.0  
1000 s: (126.0...134.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.10  
Speed rpm : 995...1010

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.40...4.60  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7056

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 5  
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a22  
 Edition : 15.12.89  
 Replaces : 11.12.87  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 061  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 2  
 EP type number : 0 412 026 050  
 Governor  
 Governor design. : RQV300...1100PA700-2  
 Governor no. : 0 421 813 543

Customer-spec. information  
 Customer : MAN

Engine : D2866LF/290  
 1st version kW : 213.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750  
 Rack travel in mm : 10.30...10.40  
 Del. quantity cm<sup>3</sup>/ : 18.3...18.5  
 100 s: (18.0...18.8)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.8...5.0  
 Del. quantity cm<sup>3</sup>/ : 1.2...1.8  
 100 s: (0.9...2.1)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.50...1.70  
 2nd speed rpm : 850  
 travel mm : 5.70...6.00  
 3rd speed rpm : 1100  
 travel mm : 8.00...8.20

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1130  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 750  
 Aneroid pressure h: 1000  
 Del. quantity : 183.0...185.0  
 1000 : (180.0...188.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 114...122

#### Testing:

1st rack travel in: 8.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 62...70

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 300  
Rack travel in mm : 4.80...5.00  
Rack travel in mm : 2.00  
Speed rpm : 375...435

#### TORQUE CONTROL

Dimension a mm : 0.65  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 1100  
Rack travel in m: 9.90...10.00  
3rd speed rpm : 850  
Rack travel in m: 10.20...10.30  
4th speed rpm : 925  
Rack travel in m: 9.90...10.10

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.30...10.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 85  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 160  
Rack travel in m: 9.80...10.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 178.0...182.0  
1000 s: (175.0...185.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 174.0...180.0  
1000 s: (171.0...183.0)  
Aneroid pressure h: 160  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 157.0...169.0  
1000 s: (154.0...172.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 8.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a28  
 Edition : 02.01.90  
 Replaces : 30.9.88  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 069  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 3  
 EP type number : 0 412 026 051  
 Governor  
 Governor design. : RQ300/1100PA679-2  
 Governor no. : 0 421 801 402

Customer-spec. information  
 Customer : MAN

Engine : D2866LUL/290

1st version kW : 213.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

N14

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.60...10.70

Del.quantity cm<sup>3</sup>/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.0...5.2  
 Del.quantity cm<sup>3</sup>/ : 1.2...1.8  
 100 s: (0.9...2.1)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 183.0...185.0

1000 : (180.0...188.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.60  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 300  
Minimum rack travel: 6.60  
Speed rpm : 300  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 345...385

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.60...10.70  
2nd speed rpm : 750  
Rack travel in m: 11.20...11.40  
3rd speed rpm : 925  
Rack travel in m: 10.70...11.00

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.60...10.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.80...9.00  
2nd pressure hPa : 210  
Rack travel in m: 9.10...9.20  
3rd pressure hPa : 375  
Rack travel in m: 9.90...10.20

#### START CUT-OUT

Speed 1/min : 190 (210)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100

Del.quantity cm3/ : 190.0...196.0  
1000 s: (187.0...199.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 174.0...180.0  
1000 s: (171.0...183.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 119.0...121.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.00...5.20  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7878

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 g8  
 Edition : 23.11.90  
 Replaces : 5.8.88  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 072  
 Injection pump  
 Pump designation : PES6P110A720/3LS477-  
 2  
 EP type number : 0 412 016 071  
 Governor  
 Governor design. : RQ250/1100PA845-1  
 Governor no. : 0 421 801 423

Customer-spec. information  
 Customer : MAN

Engine : D2566 UH/205

1st version kW : 150.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 10.30...10.40

Del.quantity cm<sup>3</sup>/ : 9.1...9.4

100 s: (8.8...9.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del.quantity cm<sup>3</sup>/ : 1.5...2.0

100 s: (1.2...2.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Del.quantity : 91.0...94.0

1000 : (88.5...96.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.30

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1205...1235

4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0

Testing:

Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 335...375

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 800  
Rack travel in m: 10.80...10.90  
2nd speed rpm : 1100  
Rack travel in m: 10.70...10.90

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100  
Del.quantity cm3/ : 103.0...107.0  
1000 s: (100.0...110.0)  
Speed rpm : 500  
Del.quantity cm3/ : 81.0...85.0  
1000 s: (78.0...88.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 110.0...130.0  
1000 s: (106.0...134.0)

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Del.quantity cm3/ : 15.0...20.0  
1000 s: (12.5...22.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

Remarks:

: MAN-NR. 2-7902

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a39  
 Edition : 15.12.89  
 Replaces : 25.8.89  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 079  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 2  
 EP type number : 0 412 026 050  
 Governor  
 Governor design. : RQV300...1100PA876  
 Governor no. : 0 421 813 661

Customer-spec. information  
 Customer : MAN

Engine : D2866LF/290  
 1st version kw : 213.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075  
 Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750  
 Rack travel in mm : 10.30...10.40  
 Del.quantity cm<sup>3</sup>/ : 18.3...18.5  
 100 s : (18.0...18.8)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.0...5.2  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s : (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.70...2.00  
 2nd speed rpm : 850  
 travel mm : 6.00...6.20  
 3rd speed rpm : 1100  
 travel mm : 8.10...8.30

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1190  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 750  
 Aneroid pressure h: 1000  
 Del.quantity : 183.0...185.0  
 1000 : (180.0...188.0)



Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 116...124

#### Testing:

1st rack travel in: 8.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 82...90

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.60  
Speed rpm : 300  
Rack travel in mm : 5.00...5.20

#### CONSTANT REGULATION

Speed rpm : 310...410

#### TORQUE CONTROL

Dimension a mm : 0.80  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 1100  
Rack travel in m: 9.80...9.90  
3rd speed rpm : 925  
Rack travel in m: 10.10...10.20  
4th speed rpm : 975  
Rack travel in m: 9.80...10.00

#### Aneroid/Altitude Compensator Test

1st version

#### Setting

Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.30...10.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 85  
Rack travel in m: 9.40...9.50  
3rd pressure hPa : 160

N19

Rack travel in m: 9.80...10.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 178.0...182.0  
1000 s: (175.0...185.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 174.0...180.0  
1000 s: (171.0...183.0)  
Aneroid pressure h: 160  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 157.0...169.0  
1000 s: (154.0...172.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.00...5.20  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7761

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a47  
 Edition : 23.11.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 084  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 2  
 EP type number : 0 412 026 050  
 Governor  
 Governor design. : RQV300...950PA876-11  
 Governor no. : 0 421 813 896

Customer-spec. information  
 Customer : MAN

Engine : D2866LF 07

1st version kW : 213.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.20...10.30

Del. quantity cm<sup>3</sup>/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...4.9

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 995  
 travel mm : 9.20...9.40

2nd speed rpm : 300  
 travel mm : 1.60...1.80

3rd speed rpm : 500  
 travel mm : 3.40...4.00

4th speed rpm : 800  
 travel mm : 6.70...7.10

5th speed rpm : 1250  
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000  
Del. quantity : 183.0...185.0  
1000 : (180.0...188.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 293...301

Testing:  
1st rack travel in: 8.80  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 256...264

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90

#### CONSTANT REGULATION

Speed rpm : 280...390

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 9.80...9.90  
2nd speed rpm : 750  
Rack travel in m: 10.20...10.30  
3rd speed rpm : 850  
Rack travel in m: 10.00...10.10

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.20...10.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 85  
Rack travel in m: 9.30...9.40

3rd pressure hPa : 160  
Rack travel in m: 9.80...10.10

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 950  
Del. quantity cm3/ : 181.0...185.0  
1000 s: (178.0...188.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.80  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del. quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 3-7087

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 j5  
 Edition : 02.10.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 726A  
 Injection pump  
 Pump designation : PES6P120A720/3LS3205  
 EP type number : 0 412 026 729  
 Governor  
 Governor design. : RQ300/1100PA813-2  
 Governor no. : 0 421 801 416

Cust. part no. : 2-7943

Customer-spec. information  
 Customer : MAN

Engine : D2866LX

1st version kW : 251.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

N22

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300  
 Phasing :  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 12.80...12.90  
 Del.quantity cm<sup>3</sup>/ : 22.8...23.0  
 100 s: (22.5...23.3)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.1...4.3  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 650  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 1200  
 Del.quantity : 228.0...230.0  
 1000 : (225.0...233.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 650  
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.2

Testing:

Speed rpm : 100  
Minimum rack trave: 5.70  
Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Rack travel in mm : 2.00  
Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 700  
Rack travel in m: 13.30...13.50

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 110  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 470  
Rack travel in m: 11.90...12.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1100

Del.quantity cm3/ : 227.0...233.0  
1000 s: (224.0...236.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SAC 10,8 a  
 Edition : 18.12.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 748  
 Injection pump  
 Pump designation : PES6P120A320/3RS3297  
 EP type number : 0 412 026 753  
 Governor  
 Governor design. : RQV375...1000PA1022  
 Governor no. : 0 421 813 981

Customer-spec. information  
 Customer : SACM

Engine : UD18L6R3D

1st version kW : 219.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.20...12.30

Del.quantity cm<sup>3</sup>/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 375.0

Rack travel in mm : 6.8...7.2

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045

travel mm : 8.30...8.50

2nd speed rpm : 375

travel mm : 1.70...2.10

3rd speed rpm : 750

travel mm : 5.60...6.20

4th speed rpm : 1350

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 9.90...12.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 12.20  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 68...76

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.50  
Speed rpm : 375  
Rack travel in mm : 6.90...7.10

CONSTANT REGULATION  
Speed rpm : 370...500

START CUT-OUT

Speed 1/min : 295 (315)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 225.0...255.0  
1000 s: (221.0...259.0)

LOW IDLE

Speed rpm : 375  
Rack travel in mm : 6.80...7.20  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

APPLICATION

N25

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 13,8 t  
 Edition : 29.11.91  
 Replaces : 5.84  
 Test oil : ISO-4113

Combination no. : 0 402 046 103

Injection pump  
 Pump designation : PES6P120A820LS249Z  
 EP type number : 0 412 026 026  
 Governor  
 Governor design. : RQV300...1000PA204/4  
 R  
 Governor no. : 0 421 813 121

Customer-spec. information  
 Customer : IVECO-FIAT

Engine : 8217.12.024

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.00...10.10

Del. quantity cm<sup>3</sup>/ : 16.8...17.0

100 s: (16.5...17.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
 travel mm : 1.50...1.70

2nd speed rpm : 450  
 travel mm : 3.60...4.20

3rd speed rpm : 800  
 travel mm : 6.40...6.60

4th speed rpm : 1000  
 travel mm : 7.90...8.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 168.0...170.0

1000 : (165.0...173.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED



1st version  
Control lever  
position degrees: 111...119

Testing:  
1st rack travel in: 9.00  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1135...1165  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.20  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION  
Speed rpm : 300...395

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.00  
Speed rpm : 1040...1050

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Rail car